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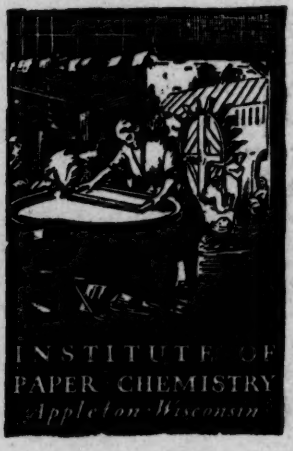
BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

AUGUST • 1952

Volume 22 Number 12

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Books and Pamphlets added to the Library During July

CHEMISTRY—YEARBOOKS

CHEMICAL SOCIETY, *London*. Annual reports on the progress of chemistry for 1951. London, The Society, 1952. 429 p.

CHROMATOGRAPHY

BLOCK, RICHARD J., LESTRANGE, RAYMOND, and ZWEIG, GUNTER. Paper chromatography; a laboratory manual. New York, Academic Press, 1952. 195 p.

CONSERVATION OF RESOURCES

U. S. PRESIDENT'S MATERIALS POLICY COMMISSION. Resources for freedom, a report to the President. [Washington, U. S. Govt. Print. Off.] 1952. 5 v. v. 1: Foundations for growth and security. 184 p.; v. 2: The outlook for key commodities. 210 p.; v. 3: The outlook for energy sources. 43 p.; v. 4: The promise of technology. 228 p.; and v. 5: Selected reports to the Commission. 154 p.

GLYCOL

CURME, GEORGE O., JR., and JOHNSTON, FRANKLIN, ed. Glycols. New York, Reinhold, 1952. 389 p.

PAPER—COATED

MOSHER, ROBERT H., ed. The technology of coated and processed papers. Prepared by a staff of specialists. New York, Chem. Publ. Co., Remsen Press Division, 1952. 733 p.

PAPER MAKING AND TRADE

THE PULP and paper manual of Canada; a publication that keeps pace with current developments in equipment, describes ideas for maintaining of plant machinery and provides a catalogue of the equipment and supplies available to the pulp and paper industry, with an extensive classified index of equipment and supplies. 20th ed. Gardenvale, Que., National Business Publications Ltd., 1952. 444 p.

PHYSICS

HAUSMANN, ERICH, and SLACK, EDGAR P. Physics. 3d ed. New York, Van Nostrand [c1948, reprinted March, 1952] 793 + xi p.

PHYSICAL SOCIETY OF LONDON. Reports on progress in physics. Executive editor, A. C. Stickland. London, The Society, 1952. v. 15 (1952). 338 p.

SCIENCE—EXPERIMENTS

SCHWARTZ, JULIUS. It's fun to know why; experiments with things around us. Illustrated by Edwin Herron. New York, McGraw-Hill Book Co. [c1952] 125 p. [This book for young people contains a chapter "Paper—a web for words" on p. 107-19.]

SOILS

THOMPSON, LOUIS M. Soils and soil fertility. New York, McGraw-Hill Book Co., 1952. 339 p.

THERMODYNAMICS

ROSSINI, FREDERICK D., WAGMAN, DONALD D., EVANS, WILLIAM H., LEVINE, SAMUEL, and JAFFE, IRVING. Selected values of chemical thermodynamic properties. Circular of the National Bureau of Standards 500. Washington, U. S. Govt. Print. Off., 1952. 1268 p.

ZEMANSKY, MARK W. Heat and thermodynamics; an intermediate textbook for students of physics, chemistry, and engineering. 3d ed. New York, McGraw-Hill Book Co., 1951. 465 p.

TRADE DIRECTORIES

POST'S Paper mill directory, 1952 ed. J. J. O'Brien, editor. New York, L. D. Post, Inc., 1952. 663 p.

TREES

ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION. African tropical timber; nomenclature—description. Paris, The Organisation, 1951. 421 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ACID PLANT

STAFFORD, R. H., and FREDERICK, J. B. The sulphite mill acid plant and recovery system at Kapuskasing. Pulp Paper Mag. Can. 53, no. 7: 111-16 (June, 1952).

The acid plant of the Spruce Falls sulfite mill is a milk-of-lime system with a normal production rate of approximately 230 gal./min. The acid analysis is 5.0% total sulfur dioxide with a combined sulfur dioxide of 3.8%. Two Paulson absorption towers operate in parallel under a maximum vacuum of 10 in. of mercury and deliver acid to a pressure absorber, which maintains the acid strength at the desired level and makes it possible to produce system acid at the relatively high temperature of 38°C. Spray coolers are employed for gas cooling after the burners. The cold gas temperature is maintained as high as is consistent with the strength of system acid required. The operation of the recovery system is entirely separated from that of the acid plant. Three absorption towers in series effectively absorb the sulfur dioxide in the digester relief gas, so that the gas vented to the atmosphere contains only traces of sulfur dioxide during peak relief periods. The last of these units is a tail-gas tower which uses water to absorb the remaining sulfur dioxide, and the weak acid thus formed is pumped to the acid plant to mix with the system acid. The tail-gas tower operates at atmospheric pressure, and the other two towers have a maximum pressure of 15 p.s.i. at the end of the digester-blowdown period. This relatively low back pressure permits the digester-blowdown pressure to drop to approximately 20-25 p.s.i., insuring a good recovery of sulfur dioxide. Wet relief from the digesters is sent directly to the cooking-acid tank and has no contact with the gas-recovery units. Ample acid-storage capacity is provided so that short-term digester or acid-plant delays do not interrupt the continuous flow of acid through the system. The blending action provided by this capacity also insures uniform cooking-acid concentration from one pumping to the next. The total recovery of sulfur from wet and dry digester relief is approximately 4270 lb./digester, which is equivalent to 238 lb./airdry ton of pulp. The actual sulfur consumption is approximately 185 lb./airdry ton of pulp. A list of operating statistics is appended. 2 flow sheets and 1 figure. E.S.

AIR CONDITIONING

MELLOR BROMLEY AND COMPANY, LTD., *Leicester, England.* Humidity control, vital concern to paper users. World's Paper Trade Rev. 137, no. 19: 1356, 1358 (May 8, 1952).

A brief reference is made to the installation of air-conditioning and humidity-control machinery at Odhams Press, London. 1 illustration. E.S.

WESTBROOK, FRANCIS A. Humidity and air conditioning control. Printing Equip. Engr. 82, no. 8: 38-41 (May, 1952).

Following a brief discussion of the effects of humidity and temperature variations on the behavior of paper in a printing plant, several simple humidification and dehumidification systems for small plants and some more elaborate complete air-conditioning systems for large establishments are described. 1 table and 6 illustrations. E.S.

ALKALINE PROCESSES

WORRELL, R. H. Importance of liquid volume and liquor concentration on kraft pulping. Paper Mill News 75, no. 26: 159-60 (June 28, 1952); Paper Trade J. 134, no. 26: 107-9 (June 27, 1952); Paper Ind. 34, no. 4: 522-4 (July, 1952).

Seven test-cook schedules are described in which changes in liquid volume and liquor concentration in stationary digesters were studied to determine a compromise loading best suited for the desired easy-bleaching kraft pulp qualities of Southland Paper Mills. A concentration of 5.16 lb. of active alkali/cu. ft. and 1025 cu. ft. of total volume were found to give a relatively uniform pulp from top to bottom without a considerable drop in strength properties and with improved bleachability; a liquor charge based on this ratio was adopted and meets the requirements of the mill conditions. 1 table. E.S.

ASSOCIATIONS

GEOHEGAN, K. P. The national organization and its relation to local sections. Tappi 35, no. 7: 124-5A (July, 1952); *cf.* B.I.P.C. 22: 727.

The author discusses informally some of the problems which the Executive Committee of TAPPI encounters at present and the manner in which the members are trying to find a solution. Particular reference is made to the need for stimulating the activities of some of the committees. E.S.

BARK

MCGILLIVRAY, A. Bark burning in Virginia. Pulp & Paper 26, no. 8: 22, 24, 26 (July, 1952); *cf.* B.I.P.C. 22: 345.

The steam-generating unit at the West Point, Va. mill of the Chesapeake Corp. developed by Combustion Engineering-Superheater Inc. is designed to use all available types of fuel, including bark, coal, and oil; the normal fuel is bark. A description of the unit is given which combines flash drying, suspension burning, and extreme turbulence of the bark and wood waste; new electronic controls (Mototrol) regulate the flow of bark into the main boiler in response to load demand. 6 figures. E.S.

ZIMMERMANN, BENGT, WILÉN, ROLF, and WIKLUND, HENRIK. Bark as fuel. Paper and Timber (Finland) 34, no. 6: 243-5 (June, 1952). [In Swedish]

The first author criticizes some of the calculations presented by Wilén (*cf.* B.I.P.C. 21: 303) and Wiklund (*cf.* B.I.P.C. 22: 314); replies by both authors are appended. E.S.

BARKERS AND BARKING

AREND, JOHN L. Bark loosening effects with 2,4-D, 2,4,5-T and ammate. Pulp Paper Mag. Can. 53, no. 7: 159, 161, 164 (June, 1952).

The toxic effect of sodium arsenite on man and wildlife lessens its advantage as a bark-peeling agent and demands that an effective substitute be found. Nontoxic 2,4-dichlorophenoxyacetic acid, 2,4,5-trichlorophenoxyacetic acid, and ammonium sulfamate crystals (ammate) were therefore tested in the Lower Michigan National Forest; they seem rather useful in killing the tops of several hardwood species but, with the exception of red maple, do not prove to be effective in loosening the bark of standing trees to facilitate bark removal. 1 table and 3 figures. L.C.

BIOGRAPHY

PAPER TRADE JOURNAL. Who's who among the superintendents. Paper Trade J. 134, no. 26: Superintendents Section 3-142 (June 26, 1952).

The members of the different sections of the American Pulp and Paper Mill Superintendents Association are listed, including their experience and (in most cases) photographs. An alphabetical index precedes the listings, and a brief history of the Association and a description of its services and divisions are appended. The paging is interspersed with advertisements. E.S.

BIRCH

TYDÉN, HILDING. Birch as a raw material in the manufacture of pulp. Norsk Skogind. 6, no. 6: 175-6, 178-9 (June, 1952). [In Swedish; English summary]

Following a short survey of the part played by birch as a component of the forests of the Swedish province Norrland, a comparison of the technical and economical factors between birch and pine as the raw material for the manufacture of bleached sulfate pulp is made. Birch pulp screens much more readily than pine; the impregnation and cooking periods are also shorter. The digesters are difficult to blow clean, unless raw tall oil is added from pine cooks; this cannot be recovered. The bulkier birch pulp dewaters much slower on the paper machine and also retards the washing process in the diffusers. The economics of the recovery process are poorer and the yield of tall oil is impaired through birch cooks. Birch pulps (sulfite and sulfate alike) are harder to bleach than spruce, and much easier than pine pulps. In cases where pine and birch pulps are used in mixtures, separate cooks would seem the logical procedure. However, laboratory experiments have shown that the identical results with regard to pulp yield and quality are obtained, whether the two pulps are cooked separately or together. 2 tables and 1 figure. E.S.

BOARD

CHEMICAL ENGINEERING. Hardboard from slabwood. Chem. Eng. 59, no. 7: 258-61 (July, 1952).

A pictured flowsheet is presented illustrating the manufacture of high-quality hardwood from the entire slabwood (including the bark) of Douglas-fir; no sizing agents, resins, or other chemicals are required. The ALLboard process was developed by A. G. Lighthall and A. B. Anderson after several years of intensive research; the Black-Knox Construction Co. designed and

built a plant for the Oregon Lumber Co. at Dee, Ore. which utilizes the process and which has a capacity of 120,000 sq. ft./day of 0.25-inch board. 1 flowsheet and 8 illustrations. E.S.

MODERN INDUSTRY. Waste into wood. Modern Ind. 24, no. 1: 65-6, 68 (July, 1952).

In a series of nine illustrations, a similar description of the "Allwood" process is given as in the preceding reference in which the trade name ALLboard is used. E.S.

BOARD—CONVERSION

ANON. New machine heart of plant. Pulp & Paper 26, no. 8: 62 (July, 1952); *cf.* B.I.P.C. 22: 562.

The development of the Andre-matic laminator and its use in the Andre Paper Box Co. at San Francisco are described briefly. 3 illustrations. E.S.

BOXBOARD CONTAINERS. Folding paper box finishing operations. Article 7—Getting proper feeding and movement of blanks through gluer. Article 8—Coordinating component units of gluer. Boxboard Containers 70, no. 714: 50, 53, 55; no. 715: 25, 27-8 (June, July, 1952); *cf.* B.I.P.C. 22: 730.

In article 7, feed adjustments, the effect of carton surfaces on gluer operation, the problem of double feed (two cartons entering a gluer at the same time on account of variations in caliper), and the final checking of the course of a blank through the gluer for detecting markings are described. Article 8 deals with the co-ordination of the speeds of the various components of the gluer to obtain top speed of faultless production. 4 illustrations in each article. E.S.

DAY, FREDERICK T. Paper conversion and usage. No. 31. Specialised conversions. World's Paper Trade Rev. 137, no. 19: 1386, 1391 (May 8, 1952); *cf.* B.I.P.C. 22: 931.

The manufacture of some paper products used by the showcard and window-display trades industries is described, with particular reference to backing boards, hangers, index shields, washers, and reinforcements. 2 illustrations. E.S.

BOARD—DEFECTS

SCOTT, PETER R. What is wrong with paperboard. Paper Mill News 75, no. 26: 161-2 (June 28, 1952); Paper Trade J. 134, no. 26: 96-7 (June 27, 1952); Paper Ind. 34, no. 4: 526-8 (July, 1952); Southern Pulp Paper Manuf. 15, no. 8: 52, 54, 56 (August, 1952).

The author discussess some of the problems which defective folding boxboard can cause in multicolor, rotary printing presses employing the wet letterpress method; the most common defects are scrap found in the piles, thickness variations, hard spots, short trimming, and curling. High-speed, efficient printing requires improved board qualities. E.S.

BOARD, STRAW

AERO RESEARCH LIMITED. The gluing of "Stramit" boards.

Aero Research Tech. Notes Bull. no. 113: 1-4 (May, 1952); *cf.* B.I.P.C. 19: 302.

The continuous process for the manufacture of Stramit boards from compressed-straw (usually wheat or barley) slabs glued to thick paper liners with Aerolite CB (urea-formaldehyde) resin is described. The most important applications of Stramit boards involve structural processes and thermal insulation. 10 figures. E.S.

MACIVER, WARREN J. Insulating board from waste straw. Pulp Paper Mag. Can. 53, no. 7: 101-5 (June, 1952).

T. L. Bodie, Winnipeg, Canada, is the inventor of the all-Canadian Bodite process for fabricating insulating board from soaked, shredded, and chemically treated straw. Bodite board chars under a blowtorch but does not burn; it is one third as heavy as wood pulp board, nail-holding tests are comparable with those on pulp board, screw-holding tests are better, but tensile strength is lower. The Bodite process is continuous, except for the pressing stage, where two hydraulic presses, placed side by side are fed alternately at 60-second intervals from the first of two transfer carriages; it requires mechanical equipment of completely new design, except for a few standard types of wire-screen conveyors. For the initial output of 14 million sq. ft. of board per year, the required straw capacity is 6900 tons or 23 tons per day, and the labor force is 30 men operating on three shifts. The steps of the process are given in detail. 2 figures. L.C.

BOARD MILLS

PULP & PAPER. Masonite Corp. moves west. Pulp & Paper 26, no. 8: 66, 68 (July, 1952).

A brief reference is made to the new plant operation of the Masonite Corp. at Ukiah, Calif., north of San Francisco, where a comprehensive forest-utilization program is under way. The Masonite process for making Tempered and Standard Presdwood is outlined, and a list of personnel, machinery, and equipment is appended. 1 illustration. E.S.

BOARD TESTING—PHYSICAL

HUNTER, R. S. Light reflection measurements applicable to the surfaces of wallboard. Tappi 35, no. 7: 325-31 (July, 1952).

To establish a standard method for measurement of the capacity of surfaces to reflect light, conditions of measurement must be standardized, both spectrally and geometrically. Two sets of spectral conditions are familiar to those who work with wallboard: (1) luminous conditions corresponding to the eye response, with maximum weight given to the yellow-green region of the spectrum, and (2) blue-light conditions of "paper-brightness" measurement. There are also two sets of geometric conditions which are widely used for reflectance measurements: (1) 45° illumination, 0° viewing, typical of the geometric conditions under which materials are examined for visual color, and (2) 0° diffuse conditions, generally used by the illuminating engineer to evaluate the efficiency of surfaces as reflectors of light. Eleven different commercial instruments which are used for measurements of light reflectance under various combinations of conditions are mentioned, with particular reference to suitable applications. They vary in cost from about $200 to $14,000, as well as in the variety and accuracy of the measurements they make. 2 tables, 16 figures, and 11 references. E.S.

BONDED FIBER WEBS

WROTNOWSKI, ARTHUR C. Some properties of thermoplastic fiber-bonded fabrics. Textile Research J. 22, no. 7: 480-6 (July, 1952).

Test procedures and physical properties are given for cotton, nylon garnett, asbestos, and glass-fiber thermoplastic, fiber-bonded fabrics. A range of thicknesses for each blend and weight is used to demonstrate a wide variety of fibrous constructions. The tensile strength, air permeability, and water absorption characteristics of four fiber-bonded fabrics are discussed. It is indicated that any textile fiber can be fabricated by this process. 4 tables, 8 figures, and 7 references. E.S.

BURNS AND SCALDS

STARK, JAMES D. Burns—modern treatment. Pulp Paper Mag. Can. 53, no. 7: 205, 207-8 (June, 1952).

Modern methods of treating burns take the accompanying systemic reactions into account. The treatment of first- and second-degree burns is described. L.C.

CELLULOSE—DEGRADATION

BAUER, FREDERICK W., and PACSU, EUGENE. Cellulose studies. Part XVII. The heterogeneous acid degradation of cellulose. Textile Research J. 22, no. 6: 385-97 (June, 1952); *cf.* B.I.P.C. 22: 483.

This paper falls into three parts: the kinetics of the hydrolysis of native (I) and mercerized cotton (II) by aqueous hydrochloric acid, an examination of very old mummy cloth (about 600 B.C.) (III), and an examination of cotton from unripe cotton bolls (IV). They are related through the studies on (III) which represent about half the paper. The outer wrappings of (III) had a D.P. of 242. This corresponds to the limit hydrocellulose of (I). However, the distribution of molecular weight (obtained by fractionation of the nitrated material) differs considerably. The distribution curve for (III) is very similar to the theoretical curve for random hydrolysis; that for limit hydrocellulose from native cellulose has a peak at 300, a higher D.P. than would be predicted from random distribution. The rate curves for hydrolysis of commercial (II) were run, but not fractionations. The rate of decrease of D.P. shows the usual initial rapid fall, followed by a leveling off in rate. The limiting value is between that for native and regenerated cellulose. The inner wrapping of (III) had a D.P. of 845 with a sharp peak at 700, a higher D.P. than the peak for the random distribution curve. The 30- and 40-day-old cotton has a D.P. of over 4000; 20-day-old cotton was insoluble in cuprammonium. X-ray diagrams for both (III) and (IV) were characteristic of cellulose. The severely degraded (III) showed several additional rings, perhaps caused by dyes or sizes. The 20-day-old cotton was not crystalline, but the 30- and 40-day-old samples gave quite clear diffraction patterns. Methanolysis of (III) gave a limiting D.P. of 200, slightly below the values for native cellulose. (IV) gave a D.P. of 225, which is more nearly in agreement with native cellulose. Enzymatic attack of (III) caused little drop in D.P. as expected from results of previous workers. 15 tables, 14 figures, and 33 references. K.W.,Jr.

BAUER, FREDERICK W., and PACSU, EUGENE. Cellulose studies.

Part XVIII. The homogeneous degradation of cellulose in phosphoric acid. Textile Research J. 22, no. 6: 397-404 (June, 1952).

A solution of cellulose in 85% phosphoric acid was allowed to react at 21°C. for 19 months. At this time, a sample poured into ice water precipitated almost 40% of a brown powder with a cuprammonium viscosity corresponding to a D.P. of 100. Using chromatographic techniques, crystalline glucose and sirupy isomaltose were obtained. The isomaltose and the higher oligosaccharides present are probably reversion products of glucose. 8 tables, 1 figure, and 25 references. K.W.,Jr.

LAPÈZE, R. P., and DARDELET, S. Attack on cellulose by means of sodium chlorite and chlorine dioxide at various pH values. Ann. Inst. Polytechnique Grenoble, numéro spécial: 23-35 (1932). [In French]

Carefully purified cotton cellulose (12.5 g.) was treated with one liter of 2% sodium chlorite at varying pH maintained by suitable buffers. Such suspensions were kept at 40° for 24 hours, during which the D.P. dropped gradually with decreased pH; the initial D.P. of 2420 dropped to 1020 at pH 2. In another series the suspension was kept at 70° for four hours, and the D.P. dropped sharply to 540 at pH 2. In either case the copper number and carboxyl content rose with decrease in pH, whereas the iodine number fluctuated. Oxidation-reduction potentials of chlorite in the presence of cotton, determined at 70° and 40° and at varying pH, indicated that the potentials rose with decreasing pH and were slightly higher at the end of a treatment than at the outset. Chlorine dioxide (a one-liter 0.5% solution) acting four hours at 70° on 12.5 grams of cotton caused a very rapid drop in D.P. with decreasing pH, as well as a great loss in α-cellulose, a rise in copper number and carboxyl content, and a slight rise in iodine number. Here the initial oxidation-reduction potential varied little between pH 6.5 and 1.4, but, at the lower pH, it was markedly higher at the end of the reaction. At pH 6.5, however, it was actually lower than initially. When 15 g. of cotton were treated for 2.5 hours at 70° with one liter of 1% sodium chlorite at pH 5, the D.P. and α-cellulose content dropped negligibly, and the copper number remained unchanged; at 90° the D.P. was markedly lowered. Kraft or sulfite pulps were less affected by sodium chlorite at pH values above 5 than was cotton. The difficulties in determining chlorine dioxide and the chlorite ion (ClO_2^-) are discussed briefly. 6 tables, 4 figures, and 4 references. L.E.W.

CELLULOSE—HEMICELLULOSE

ADAMS, G. A., and CASTAGNE, A. E. Purification and composition of a polyuronide hemicellulose isolated from wheat straw. Can. J. Chemistry 30, no. 7: 515-21 (July, 1952).

A homogeneous polyuronide hemicellulose has been prepared from a crude hemicellulose isolated from wheat straw holocellulose by hot water. The method of preparation consisted of fractional precipitation of the acetylated hemicellulose from chloroform solution by petroleum ether. Approximately 50% of the recovered fractions consisted of a polysaccharide made up of 28 moles of D-xylose, 5 moles of L-arabinose, and 3 moles of uronic acid and having an $[\alpha]_D^{20} = -92°$ and a molar ratio, methoxyl: uronic anhydride, of approximately 1.0. Intrinsic-viscosity measurements indicated a D.P. of approximately 30. Separation of hexosans present in the original hemicellulose showed that they were not chemically combined with the main pentosan

fraction. They were recovered admixed with short-chain pentosan material containing a higher proportion of arabinose to xylose than the main homogeneous fraction. 4 tables and 12 references. E.S.

FINEMAN, MANUEL N. The role of the hemicelluloses in the mechanism of wet strength. Tappi 35, no. 7: 320-4 (July, 1952).

Data are presented which confirm earlier concepts that the alkali-soluble, water-swellable hemicelluloses are responsible for interfiber bonding and, hence, are a major factor in the strength of paper. The major factor in the mechanism of wet strength is shown to be the insolubilization and reinforcement of these hemicellulosic constituents by the wet-strength additives. The mechanisms of tear strength and of softness in paper are also considered in terms of the role played by the hemicelluloses, and conditions which may promote improvements in these properties are suggested. 4 tables, 4 figures, and 35 references. E.S.

THOMPSON, JAMES O., and WISE, LOUIS E. Some molecular properties of the hemicelluloses of big tooth aspen. Tappi 35, no. 7: 331-6 (July, 1952).

A study has been made of some molecular properties of representative hemicellulose fractions from bigtooth aspen. The fractions were extracted with aqueous potassium hydroxide directly from the wood meal and also from a holocellulose prepared according to a modification of the Thomas procedure. Viscosity measurements on dilute solutions of these fractions in 10% aqueous potassium hydroxide and osmotic pressure measurements on chloroform solutions of a butyrate indicated a number average D.P. of 155. This is in excellent agreement with the results reported by others for hemicelluloses isolated under mild conditions from wheat straw, beech, spruce, and paper birch. Aqueous solutions exhibited the typical electroviscous behavior of polyelectrolytes. Preliminary experiments, in which chain degradations were followed by viscosity measurements, showed that scissioning occurred in aqueous solution in the presence of alkali or of dilute mineral acid, and also on warming to about 60°C. or higher. Degradation in aqueous solution at 100° was marked and was accompanied by a significant decrease in pH. 4 tables, 3 figures, and 22 references. E.S.

CELLULOSE ETHERS

BLAIR, MARY GRACE. Alcoholysis of cellulose with 2-methoxyethanol. J. Am. Chem. Soc. 74, no. 13: 3411-14 (July 5, 1952).

In a study of several alcohols for the alcoholysis of cellulose and its derivatives, 2-methoxyethanol (methyl Cellosolve) proved the most advantageous on account of its solvent power, its high reactivity, and its high boiling point, which makes the use of an autoclave unnecessary. *p*-Toluenesulfonic acid was used as the acid. The materials alcoholyzed included cotton, hydrocellulose, mercerized cotton, decrystallized cotton (by treatment with ethylamine), trimethylcellulose, cellulose acetate, starch, and methylated starch. 1 table, 5 figures, and 8 footnotes. K.W.,Jr.

CHEMICAL TESTING—LIGNIN

CHÊNE, M., DEISSENBERG, CH., and LION, N. The determination of lignin in plant tissues and in pulps. Ann. Inst. Polytechnique Grenoble, numéro spécial: 111-25 (1952). [In French]

Using various wood, straw, and pulp samples, the authors determined lignin by each of the following procedures: (1) the U. S. Forest Products Laboratory method, (2) the af Ekenstam method, (3) a (fully described) modification of the af Ekenstam technique, (4) the Noll procedure, and (5) the colorimetric technique of Mehta. In each case, the precautions required and the attendant difficulties are fully discussed. The determination of the methoxyl content of lignin is also outlined. In general, the methods for lignin gave reasonable concordant results, although in the case of woods and straw, method (1) proved the most useful. Lignin determinations in the case of unbleached sulfite pulps invariably led to filtration difficulties, and in the application of the sulfuric acid methods, some lignin was also lost in the acid filtrates. All methods could be applied to kraft pulps. In the case of bleached pulps, only the colorimetric method of Mehta was applicable. 2 tables and 4 references. L.E.W.

CHEMICAL TESTING—LIGNOSULFONIC ACID

SENJU, RYOICHI. A new method for the determination of lignosulfonic acid in spent sulfite liquor. Bull. Chem. Soc. Japan 25, no. 2: 131 (April, 1952). [In German]

Lignosulfonic acid in spent sulfite liquor is quantitatively precipitated with polyglycolglucosamine (I). The determination is carried out by the addition of a standardized (I) solution to a dilute spent sulfite liquor and the excess (I) is titrated with a standardized polyvinyl alcohol sulfuric acid ester. It is claimed that lignosulfonic acid and (I) give a compound with a clear stoichiometric ratio of the components, from which an equivalent weight of about 380 is calculated for lignosulfonic acid. 1 table. F.E.B.

CHEMICAL TESTING—PULP—CUPRAMMONIUM VISCOSITY

DOERING, H., and RUTISHAUSER, M. Remarks to the article by Rutishauser and Weber "A rapid method for determining the cuprammonium viscosity." Svensk Papperstidn. 55, no. 11: 406-7 (June 15, 1952). [In German] *cf.* B.I.P.C. 22: 570.

With reference to the modification of the Küng-TAPPI method by Rutishauser and Weber, the first author points out that in a rapid method the absolute exclusion of oxygen and operation in a nitrogen atmosphere are not essential as exemplified by the Doering procedure (*cf.* B.I.P.C. 20: 894). 3 references. In the reply by Rutishauser, the importance of avoiding any, even slight, contact between oxygen and the cuprammonium solution is emphasized, particularly for viscosity ranges higher than 20 centipoises. 4 references. E.S.

CHEMICAL TESTING—PULP—GROUNDWOOD PERCENTAGE

OSKARSSON, R. On determinations of mechnical pulp in paper and board. Svensk Papperstidn. 55, no. 12: 426-31 (June 30, 1952). [In English; German and Swedish summaries]

Customs regulations and import tariffs of paper and board are generally based upon the percentage of mechanical pulp in the products. The two principal procedures for determining the groundwood percentage [the Halse method involving a lignin analysis (I) and microscopical fiber analysis according to TAPPI T 401 m-42 (II)] have been investigated for their accuracy by statistical methods. In the case of well-defined and known raw materials, (I) was found to produce more accurate results than (II). However, this holds only when the regression lines for the two component pulps

are known. This is not the case when paper or board of unknown origin is examined. Under these conditions, (II) gives the more reliable results. 3 tables, 4 diagrams, and 6 references. E.S.

CHEMICALS

KRAMER, L. A. Polyphosphates in the paper industry. Paper Mill News 75, no. 26: 142, 144-6 (June 28, 1952); Paper Trade J. 134, no. 26: 98-103 (June 27, 1952); Paper Ind. 34, no. 4: 518, 520, 522 (July, 1952).

The author discusses some of the applications of polyphosphates in the pulp and paper industry. They are particularly valuable because of their performance as sequestering agents for hard-water elements, such as calcium and magnesium; they also act as dispersants for clay, in the control of pitch troubles, and for deinking. They are useful as assistants in bleaching, since in their presence part of the coloring matter in the fiber is removed or altered so that the actual bleaching becomes more effective. Another valuable use is the reconditioning of papermaking felts. 4 figures. E.S.

LYBERG, BENGT. A chemical industry based upon the by-products of the cellulose industry. Svensk Papperstidn. 55, no. 11: 385-92 (June 15, 1952). [In Swedish]

The possibilities of developing a Swedish chemical industry based upon the by-products of the forest industries, ethyl alcohol from spent sulfite liquor in particular, are discussed. 4 diagrams. E.S.

MCLEOD, H. Scoreboard on chemical production. Can. Chem. Processing 36, no. 6: 10, 14, 16, 18, 20, 22, 24, 26, 28-9 (June 1, 1952).

In a general discussion of the Canadian expansions during 1951, data on sulfur and pyrites, caustic soda and chlorine (p. 18, 20, 22), and pulp and paper (p. 28-9) are included. Statistical data in tabular form accompany most of the statements. E.S.

CHIPS

RALSTON, J. M., and KLEIN, MAURICE. Methods of checking wood and chip quality. Tappi 35, no. 7: 294-7 (July, 1952).

Wood-quality counts are made at the Union Bag & Paper Corp. to determine trends in the quality of new receipts and to attempt to explain variations in operations. Each bolt in a sample is examined and classified according to definitions set up for each of the various types of undesirable wood. A description of the procedure for making wood-quality counts is included. Chip-size distributions are made with the Williams Standard chip screen on samples taken each shift at the chip bins. These size distributions are useful in aiding the operating department to control woodroom operations. Data from tests on the effect of knife angle and knife settings on chip size are included. 1 table and 7 figures. E.S.

CLAY

CARTHEW, A. R., and COLE, W. F. A dispersion unit for clays. J. Sci. Instruments 29, no. 7: 235 (July, 1952).

A unit consisting of a beaker, a high-speed stirrer, and a special arrange-

ment of baffle and cover system on the stirrer for the mechanical dispersion of clay samples is described. 1 figure. E.S.

WEST, W. J. Size determination of clay particles in water suspensions by use of low-angle x-ray diffraction. J. Colloid Sci. 7, no. 3: 295-305 (June, 1952).

The results of the study show that low-angle x-ray diffraction can be used to measure the sizes of particles in clay-water suspensions. The principal advantage of the method is that the sample studied is relatively large and not disturbed in the sampling or measuring process. From the measurements of the size of particles in clay-water suspensions a better picture of the physical nature of the clay-water system has been obtained. These experiments show that the clay particle size increases in forming the water suspension. The increase in size is proportional to the swelling ability of the clay. The best swelling clays had the largest particle size in the clay-water suspension. This is contrary to the theory that particles in a water suspension are smaller for a highly swelling than for a poorer-swelling clay. The clay-water systems with the largest particles were found to have the largest viscosity and the largest gel strength. The experiments also show that viscosity lowering by additives is accompanied by size reduction of the particles. 9 figures and 6 references. E.S.

COAL

WILLIAMS, J. N. Preparation, classification and efficient usage of coal. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 1: 1-24; discussion: 25-7 (February, 1952); Paper-Maker (London) 123: 32-4, 36, 38, 40, 42, 44, 48, 50 (Mid-summer, 1952).

Washed and dry slacks and smalls, the kinds of coal in most general supply today for industrial purposes, are discussed from the standpoint of production and combustion. Methods employed in the preparation of coal, the handling of fine coals, the influences of sizing and segregation upon combustion efficiency, and the effect of adding moisture to slacks are described. In conclusion, reference is made to the overheating and spontaneous combustion of coal in the stockyard. 2 tables. E.S.

COOKING PROCESS

JAYME, GEORG, and WÖRNER, GÜNTHER. A comparison of alkaline sprucewood cooks with additions of hydrosulfite and sulfite. Das Papier 6, no. 11/12: 220-2 (June, 1952). [In German] *cf.* B.I.P.C. 22: 659-60.

The authors describe a series of preliminary, experimental sprucewood cooks (cooking temperature 170°C., cooking period 24 hours) with alkaline liquors (2-3% sodium hydroxide), to which either 6.25% sodium hydrosulfite (I), or an equal amount of sodium sulfite (II), or a mixture of both reducing agents (III) [1.56% (I) and 4.69% (II)] had been added. Cooks containing (I) gave a higher yield with a higher holocellulose content than those containing (II). The brightness values (as compared with barium sulfate), 61.7 and 56, obtained with (I) show a considerable increase over those obtained with (II), which amounted to 39.4 and 41, and extend almost into the range of unbleached spruce sulfite pulps. All results obtained with (III) occupied intermediate positions between the (I) and (II) values.

Possible explanations for these differences are given, and the need for continued studies is indicated. The publication of additional data obtained with acid prehydrolysis and (I) and straight sulfite cooks is in preparation. 1 table and 5 footnotes. E.S.

DE-INKING

JELKS, J. W. De-inking paper pulp by flotation. Paper Mill News 75, no. 28: 14-17 (July 12, 1952); *cf.* B.I.P.C. 22: 663.

Essentially the same information as in the previous article is given. 1 flowsheet and 7 figures. E.S.

DETECTORS (ELECTRONIC)

GROBTUCH, MARCEL, and WILLIAMS, D. J. Pulp-log metal detector. Electronics 25, no. 7: 124-6 (July, 1952).

A tramp-metal detector for protecting multiblade chippers from damage by pieces of ferrous metal dislodged during the lumbering operations or from the conveyors and barkers ahead is described. The device was installed in an Australian mill in a somewhat cramped location where all surroundings are subject to heavy vibration. A single-coil method was therefore adopted. Details of the installation to provide immunity to strong electromagnetic fields from nearby induction motors and to fluctuating line voltage are given. 4 figures. E.S.

DIELECTRICS—TESTING

SCHÖNFELD, T., and REINHARZ, M. Ion-exchange capacity and dielectric strength of paper. Monatsh. 83, no. 3: 753-7 (June 15, 1952). [In German]

Because cellulose in pulp contains a small amount of carboxyl groups, papers from such pulps have the properties of ion exchangers of small capacities (about 5×10^{-6} equivalent per gram). On treatment with salt solutions, cations adsorbed by the carboxyl groups can be replaced by other cations. Hydrogen ions occupy a special place because their adsorptive capacity is considerably increased and surpasses that of many bivalent cations. The difference in the adsorption mechanism between hydrogen ions and metal ions is the reason why papers in which the carboxyl groups are neutralized by hydrogen (H-papers) (I) contain considerably fewer ions than papers with adsorbed metal ions (Me-papers) (II). With completely dried papers the dissociation action of the exothermic hydration process is eliminated, and all adsorbed hydrogen ions can be assumed to be present in a covalent combination state. (I) and (II) from lignin-free alkaline pulp were prepared and the dependency of the breakdown voltage upon the thickness and the density of the papers was determined. The results are given in graphical and tabular form. 1 table, 1 diagram, and 4 references. F.E.B.

DIESEL ENGINES

A. C. MORRISON (ENGINEERS), LTD., *Loughborough*. Power reliability in paper mills. World's Paper Trade Rev. 137, no. 26: 1930, 1932 (June 26, 1952).

The Morrison Diesel-powered, automatic, electric generating plant for stand-by purposes is described. Upon failure of the regular power supply the unit is automatically and immediately placed in operation to carry the load. 1 illustration. E.S.

DIGESTERS

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. *Digester Corrosion Committee.* Digester inspection report data sheet. Tappi 35, no. 7: 136-7A (July, 1952).

A procedure for acquiring and recording data pertaining to the corrosion of alkaline digesters and to the service life of the vessel is presented. 1 table and 2 figures. E.S.

THIELSCH, HELMUT. Stainless-steel applied liners. Welding Research Suppl. 17, no. 7: 321-37 (July, 1952).

Applied liners are composite plates where a relatively thin sheet of a corrosion- or heat-resisting metal is bonded intermittently to a backing steel, usually a commercial grade of mild or low-alloy steel. A review of published and unpublished data on welding procedures (spot or seam welding, plug welding, strip welding, and through welding) used in the fabrication of applied liners, heat treatments, testing procedures, code requirements, and service failures is presented. The article is of particular interest with regard to digester-corrosion problems. 3 tables, 16 figures, and 68 references. E.S.

DYES AND DYEING

WIMMER, LEOPOLD. Optical bleaching agents for paper. Svensk Papperstidn. 55, no. 11: 393-4 (June 15, 1952). [In German]

The brightening effect of optical bleaching agents and methods of application are described; particular reference is made to Tinopal 2 B, a product of J. G. Geigy A.-G. Beater application is the most general method; other possibilities include dipping or surface treatment, like coating, spraying, or brushing. E.S.

ELECTRIC PRECIPITATORS

CREIGHTON AND PARTNERS, LTD., *London.* Dust elimination. World's Paper Trade Rev. 137, no. 18: 1295 (May 1, 1952).

The Gromax electrostatic dust precipitator is described which is intended as a complement to air conditioning. 1 illustration. E.S.

ESPARTO

FALDNER [J.] Esparto, the papermaking raw material of Spain. Wochbl. Papierfabr. 80, no. 11: 394, 396 (June 15, 1952). [In German]

Prior to the civil war, the wild-growing esparto grass in southern Spain was exported to Great Britain; since 1939 the supplies have been retained in the country, systematic cultivation of the grass was begun, and esparto and Albarin (a variety of esparto) now form the principal raw material of the Spanish paper industry. The distribution, cultivation, harvesting, and shipment of Spanish esparto are described; statistical data on its use by different mills and a chemical analysis (57-61% cellulose) are included. 5 tables. E.S.

EVAPORATION AND EVAPORATORS—SULFITE WASTE LIQUOR

ELIASSEN, ROLF. 1951 industrial wastes forum. Sewage Ind. Wastes 24, no. 7: 851-73 (July, 1952).

In a general discussion of industrial waste problems, the last section (p. 870-3) is devoted to the evaporation of spent calcium-base sulfite liquors, with particular reference to Swedish installations, as reported by Harold E. Jacoby. E.S.

FIBER—STRUCTURE

LIESE, WALTER, and FAHNENBROCK, MARGARETE. Electron microscope investigations on the structure of the bordered pit. Holz Roh- u. Werkstoff 10, no. 5: 197-201 (May, 1952). [In German]

Electron-microscope studies using primarily the silica gel-replica technique confirm that the secondary wall enclosing the chamber of the bordered pit in several species of coniferous woods [pine, spruce, fir, larch, and Douglas-fir were examined, but the article deals only with Scotch pine (*Pinus silvestris*)] is composed of circularly arranged fibrils around the pit aperture. On the side adjacent to the pit chamber, small elevations with an average diameter of about 0.20μ are distributed irregularly between these fibrils. A thin disk, the torus, is the true closing membrane portion of the pit membrane. This torus has a fringe-like continuous edge from which filaments about 0.04 to 0.06μ thick lead almost radially to the outer boundary of the pit. The number of filaments varies widely in individual pits, but an average figure for pine is about 200 per pit. 1 table, 9 figures, and 16 references. I.H.I.

NOBÉCOURT, P., and CHIAVERINA, J.-O. Studies on the structure of vegetable fibers. Ann. Inst. Polytechnique Grenoble, numéro spécial: 127-33 + 4 plates (1952). [In French] *cf.* B.I.P.C. 22: 740.

This is part of the material presented in more detail in the previous reference. 13 figures. L.E.W.

FIBER—TESTING

HOPPER, TURNER H. Check sample testing of physical properties of cotton with instruments; a summary report prepared for the Task Group on Inter-Laboratory Check Sample Testing of Cotton Fibers. Textile Research J. 22, no. 7: 472-5 (July, 1952).

A summary is presented of the results of the first large-scale effort to determine the extent to which different laboratories agree or disagree in their measurements of fiber length, strength, and fineness. The laboratories used their regular testing methods and no effort was made to achieve uniformity of procedure. The report, therefore, should not be considered a critique of equipment or methods. In general, it was observed that laboratories having an average high or low level of tests consistently reported high or low values for all the individual check samples; a few exceptions were noted. The results clearly indicate the need for standarization of procedures and instruments. 4 tables. E.S.

FILTERING SPECIALTIES

CHEMICAL WEEK. Up, down, and up again. Chem. Week 71, no. 2: 34, 36 (July 12, 1952).

Solka-Floc, a high α-cellulose manufactured by the Brown Co., was used in large quantities during the war as an ingredient of the special welding rods needed in shipyards. When this market collapsed, other uses had to be dis-

covered for the product. New applications were found in the manufacture of cellulose ethers, as rubber additives, and as filter aid for caustic liquids. Its high price has thus far excluded it from the big filtering fields (the beer, dry-cleaning solvents, and sugar-sirup industries). Because of the diatomaceous earth strike, however, production men are showing renewed interest in cellulose-type filter aids. 1 diagram. E.S.

FLAVOR AND AROMA

CARTWRIGHT, L. C., and KELLEY, P. H. Organoleptic evaluation. Modern Packaging 25, no. 11: 145-7, 201-2, 204 (July, 1952); Tappi 35, no. 7: 306-9 (July, 1952).

Sensory evaluation of food products which are subject to aroma and flavor pick-up from packaging materials can produce accurate data which are unattainable by physical and chemical means. An organoleptic testing panel of approximately 10 members tastes and smells food samples which have been aged independently and with particles of the proposed packaging materials. Unidentified, unaged samples are provided as controls and as a test of the panel's accuracy. Packages are scored for their imparting of unsatisfactory taste, aroma and aftertaste, and for their absorption or release of desirable traits. The panel then recommends the inside and outside wrapper, the sealing glue, and the ink which least alter the taste and aroma of the contents. 3 tables, 2 illustrations, and 10 references. L.C.

FLAX

CHÊNE, M., DEISSENBERG, CH., and DELAVEAU, M. Studies on cooks made with flax tow used in the manufacture of cigarette papers. Ann. Inst. Polytechnique Grenoble, numéro spécial: 37-9 (1952). [In French] *cf.* B.I.P.C. 22: 741.

Separate cooks were made with 6, 12, 18, and 24% sodium hydroxide (based on dry flax) at 140, 160, 170, 180, and 190°C., for five and 10 hours. A graph shows the relationship between pulp yields, D.P., and lignin content of the pulps, and the various cooking schedules. The work is being continued. 1 figure. L.E.W.

FORESTS AND FORESTRY

ANON. The supply of forest products in the United Kingdom. Norsk Skogind. 6, no. 6: 157-63 (June, 1952). [In Norwegian]

A review is presented of the forests and forest products of Great Britain and Northern Ireland, including import and export statistics for paper, pulp, and board. 1 map and 11 tables. E.S.

HAWES, E. T. Improve cutting practices on small woodlands. Pulp Paper Mag. Can. 53, no. 7: 150, 152 (June, 1952).

The author discusses the problems which the large wood-using industries encounter in trying to convince small-woodlot owners to employ improved cutting practices. He stresses the effectiveness of convincing them of the dollar-and-cents return from such methods. L.C.

WILSON, M. R. Pulpwood procurement combined with woodlot conservation. Pulp Paper Mag. Can. 53, no. 7: 144-6, 149 (June, 1952).

The Canadian International Paper Co. has worked out a forestry-instruction program for woodlot owners in the area surrounding Hawkesbury. An experimental farm near Calumet, Que. is being used to show farmers how proper cutting can salvage good pulpwood and insure the better growth of younger stands for future use. 1 table and 3 illustrations. L.C.

GROUNDWOOD PULP

BRECHT, WALTER, and CORNEL, HELMUT. Comparison of the behavior on beating of a chemical wood pulp, a steamed groundwood, and a standard groundwood. Das Papier 6, no. 11/12: 200-5; no. 13/14: 285-90 (June, July, 1952). [In German]

As far as known to the authors, no data on the beating behavior (I) of mechanical pulp exist, although the (I) of chemical pulps forms an important criterion in their evaluation. To fill this gap, the authors investigated the (I) of a steamed sprucewood groundwood (II) and a standard newsprint spruce groundwood (III) in comparison with an unbleached, medium-hard sulfite pulp of Sieber no. 65 (IV). All three were beaten in the Jokro mill and in an experimental beater, (IV) under medium conditions and (II) and (III) under mild and harsh conditions. With all three pulps, the beating in the Jokro mill proceeded much slower than in the beater, although the characteristic tendencies of each pulp and the variations between them manifested themselves distinctly along the same lines, irrespective of the instrument or operating conditions employed. (II) in unbeaten condition resembles (III) in its paper-technological properties far more than (IV), and this tendency is also evident after beating. The beating curves of (II) and (III) begin at much higher values than those for (IV), because the grinding process has already partly absorbed the effect otherwise brought about by the increase in beating degree; the curves proceed rather flat, and the swelling behavior is similar. However, whereas (IV) at the beginning of the beating process consisted of approximately 80% long fibers and 10% each of short fibers and mucilage and did not lose more than about half of its long fibers after a beating period of 65 minutes, (II) and (III) lost their much smaller fraction of long fibers completely after a treatment of 30 to 40 minutes; at the end of the beating period they consisted of approximately one third of short fibers and two thirds of fine stuff. On account of their hardness, the cutting effect on the groundwood fibers is much more pronounced than on (IV). In (IV), breaking length, burst, folding number, and folding endurance increased in the known manner and, after approximately one third of the beating period, a maximum for tear-through was reached. The beating of (II) and (III) resulted in only slight increases for breaking length and burst, and noticeable decreases for tear-through, folding number, and folding endurance (all properties which are based on fiber length). The initial wet strength of (IV) could be considerably improved by beating, whereas the slight increase with (II) and (III) at the beginning was completely lost and was followed by a decrease on prolonged treatment. For other properties, such as specific gravity, absorptivity, and air permeability, the influence of beating was much less noticeable for (II) and (III) than for (IV). The data show that, under the conditions and for the instruments employed, beating for (II) and (III) involves, for many paper properties, no advantages and frequently serious disadvantages. The possibility that other refining instruments with less fiber-cutting and shortening effects may bring better results needs further study. 5 tables, 9 figures, and 16 references. E.S.

BRECHT, WALTER, and KLEMM, KARLHEINZ. The structural mixture in a groundwood pulp as the key to the knowledge of its

technological properties. Wochbl. Papierfabr. 80, no. 11: 364-8, 370; no. 12: 451-4 (June 15, 30, 1952). [In German]

The ratio of fibers (I) to fine stuff (II) in a mechanical pulp serves as a means of gaging its quality and properties. (I) includes both long and short fibers, and (II) consists of both the nonswollen wood flour (IIa) and the swollen mucilage (IIb). When the content of (I) or (II) was too high, initial wet strength suffered. There was a normal range for optimum breaking length (III). The maximum folding endurance (IV) was noted when the ratio of (I) to (II) was about 4:1. Air permeability and absorptivity decreased sharply with a drop in (I). The individual influence of (IIa) and (IIb), when admixed with (I), was also studied. With increasing amounts of (IIb) there was a gradual increase in (III), whereas increasing amounts of (IIa) caused a marked linear drop in (III). (IV) rose to a maximum at about 20% (IIb), but then dropped sharply thereafter, and dropped rapidly with increasing amounts of (IIa). In the case of Brecht-Imset tear, the maximum was reached with about 20% (IIb); this property dropped linearly, however, with increasing amounts of (IIa). From these data, the authors have constructed a schematic chart indicating the quality of normal groundwood and of pulps containing either too much (I) or (II). The theoretical concept of a limiting zone for mechanical pulps has also been formulated, in which the pulp contains just enough (II) to seal completely the interstices between (I). The practical significance of this concept is discussed. Whereas the introduction of 15% sulfite pulp into a mechanical pulp mixture had a favorable influence on the initial wet strength, on (III), and on (IV), it had little effect on the basis weight, absorptivity, or air permeability of any of the mixtures of (I) and (II). 1 table, 12 figures, and 11 references. L.E.W.

HARD WOODS

BOUCHAYER, H., and LAURENT, S. Pulps from hardwoods. Ann. Inst. Polytechnique Grenoble, numéro spécial: 165-6 (1952). [In French]

A brief abstract of the work carried out for the Institut National du Bois is presented; the woods used were poplar, beech, and birch. Alkaline, semi-chemical, and sulfite cooks were made. Poplar pulps with the best strength properties could be prepared with sodium hydroxide and sulfur; the best bleaching results were obtained with a five-stage process. For sulfite pulps, a three-stage bleaching process was adopted. L.E.W.

CROSSLEY, T. LINSEY. Multi-fibrous hardwood pulp. Pulp Paper Mag. Can. 53, no. 7: 126-30 (June, 1952); *cf.* B.I.P.C. 8: 494.

The production of fine paper, including cigarette paper, from orchard slash and other slash without bark removal and the additional value in such pulp of long bast fibers from the bark are discussed. Annual cutting of orchard slash in the three orchard areas of Canada can produce 100 tons or more of multifibrous pulp daily. The harvesting of woodlands slash is also considered a practical proposition. The use of the term "multifibrous" refers to the presence of two distinct types of fiber, short, thin tracheids for opacity, and long, cottonlike bast fiber for strength. 6 figures and 4 references. E.S.

HISTORY

ANON. A century of progress with Sorg. Am. Paper Merchant 49, no. 5: 25-6 (June, 1952); Am. Paper Converter 26, no. 6: 38 (June, 1952).

A century of papermaking is celebrated by the Sorg Paper Co., Middletown, Ohio in 1952. A history of the company and its owners is presented. 3 illustrations. E.S.

CHEMISTRY & INDUSTRY. Alex. Pirie and Sons Ltd.; The Culter Mills Paper Co. Ltd. Chemistry & Industry no. 26: 596-9 (June 28, 1952).

With reference to the annual general meeting of the Society of Chemical Industry in Aberdeen, Scotland, in July, 1952, a number of industrial establishments in the city and its vicinity which are of interest to the participants of the meeting are described briefly. Included in the descriptions is a brief historical account of the Stoneywood Mill of Alex. Pirie & Sons, Ltd., now absorbed by Wiggins, Teape & Co., Ltd. (where an average of 400 tons of fine paper is made per week) and of the Culter Mills Paper Company, Ltd., which pioneered in the manufacture of coated paper in 1888. 4 illustrations. E.S.

SPAHR, WILHELM. Juan Gabriel Romani and his descendents, a chapter of Spanish papermaking history. Wochbl. Papierfabr. 80, no. 11: 411-15 (June 15, 1952). [In German]

The author presents a history of the paper industry in the vicinity of Capellades (near Barcelona) in the Spanish province Catalonia, where approximately 35 to 40 medium-sized and small paper mills with preponderantly manual operations are still in existence. Juan Gabriel Romani introduced papermaking into this region in 1620; since then, 12 generations of his descendents have operated paper mills without interruption. The great significance of the family operations lies not so much in the size of the mills or the amount of their output, but in the exceedingly high quality of their papers, which have been used for centuries for important state documents and similar purposes where durability is essential. 6 illustrations, including a trade mark of a ream wrapper and two watermarks of Romani paper. E.S.

H-ION CONCENTRATION

WILLIAMS, A. E. Paper making and pH values. World's Paper Trade Rev. 137, no. 18: 1313-14, 1319-20 (May 1, 1952).

Following a brief explanation of the theory of pH, colorimetric and electrometric methods of measurement and typical applications of pH-control apparatus in the paper industry are described. 6 figures. E.S.

INORGANIC PAPER

ANON. Insulating paper vs. asbestos. Chem. Eng. 59, no. 7: 248 (July, 1952); Modern Ind. 24, no. 1: 105 (July, 1952).

A brief description is given of the manufacture of paper from hydrous and anhydrous quartz (glass) which will withstand 3000°F. and of a ceramic paper made from an alumina-silica mixture, one of several clays, or even ore-refining slag. The raw material is purified in a fractionating box, producing very fine, fluffy white fibers which are mixed with bentonite clay and, if desired, may be bonded with resins. The temperature resistance of resin-bonded panels is about 2500°. A third development, mentioned only in the second reference, involves a silicone paper made by spraying heated silicone resin in a fine metal screen to form a fiber mat usable as an air filter. 1 illustration in the first reference. E.S.

O'LEARY, MARTIN J., SCRIBNER, BOURDON W., MISSIMER, JOSHUA K., and ERVING, JAMES J. Manufacture of paper from glass fibers. Tappi 35, no. 7: 289-93 (July, 1952).

A paper made entirely of glass fibers, with no additive, was developed at the National Bureau of Standards in co-operation with the Naval Research Laboratory for use as an air filter. The paper may also be useful for filtration of liquids, and should have extensive applications in electronic and other electrical equipment because of its excellent insulating properties and very high resistance to heat. Certain modifications of the practice in making paper from cellulose fibers were found necessary. The diameter and length of the fibers have an important bearing on both strength and good formation. The best results were obtained with fibers having a diameter of 0.5 to 0.75 mμ. A combination of long and short fibers, free from fines, gives the strongest paper. 2 tables, 7 figures, and 3 references. E.S.

INSECTS AND VERMIN

KANTROWITZ, M. S. Book protection from insects-molds. Printing Equip. Engr. 82, no. 8: 48 (May, 1952).

At present the only efficient way of book preservation is the use of materials not attractive to insects or conducive to mold formation. Examples of such materials for bookcloth, sewing thread, adhesives, and paper are given. E.S.

JUTE

CALLOW, H. J. Delignification of jute with sodium chlorite. J. Textile Inst. 43, no. 5: T247-9 (May, 1952).

A method was required for removing lignin from jute without disturbing the hemicelluloses and those functional groups which are not associated with lignin, especially the acetyl groups; previous procedures using sodium chlorite which are described in the literature were not found satisfactory. The following procedure gave a cellulose of approximately the same purity as Cross and Bevan cellulose. Seven 30-minute treatments with 2.8% sodium chlorite solution at a temperature near the boiling point, followed by an extraction with sodium bisulfite removed all traces of lignin; the loss in weight was 34.1% and the loss in acetyl content, 67%. When lower chlorite concentrations were used (0.7%), a positive color test for lignin was still obtained after 13 extractions. A comparison of chlorite-treated (2.8% concentration) (I) and Cross and Bevan cellulose (II) showed that both samples had approximately the same α-cellulose, xylan, and acetyl contents; the copper number of (I) was much lower than that of (II). Fluidities in 0.5% cuprammonium hydroxide solution indicated severe chemical damage to the cellulose in both cases. The results show that when a fraction free from lignin or its degradation products is prepared from jute with sodium chlorite, a high proportion of acetyl-containing components are removed at the same time. 2 tables and 7 references. E.S.

LATEX, SYNTHETIC

BRADFORD, E. B. Electron microscope study of plasticized latices. J. Applied Phys. 23, no. 6: 609-12 (June, 1952).

The recent increase in the use of synthetic latices in the paper, textile, and paint industries has promoted extensive investigations of the complex problem of latex formulation. The purpose of the present paper is to picture the individual particles as they actually appear in the surface of

films cast from latices before and after they have been plasticized. Silica-monoxide replicas of the surfaces of air-dried films are presented which were cast from a saran latex which contained various amounts of plasticizer. It can be observed that the poor films are composed of discrete particles, whereas in a continuous transparent film the particles have coalesced into a polymeric mass. Replicas of film surfaces are shown which were produced from different types of synthetic latices before and after they had been plasticized. 9 figures and 1 reference. E.S.

LIGNIN

ADAMS, JAMES W., MESSER, W. EARL, and HOWLAND, LOUIS H. Master batches from carbon blacks with GR-S latices. Ind. Eng. Chem. 43, no. 3: 754-65 (March, 1951).

In a thorough investigation of processes for producing master batches from improved butadiene-styrene copolymers and fine furnace blacks, carbon black dispersions in master batch compounds and appropriate dispersing agents (including lignin and bark compounds) were studied. A table is included in which the required percentage of a number of dispersing agents is listed for producing fluid 20% HAF (a high-abrasion furnace carbon black supplied by Phillips Petroleum Co., Akron, Ohio) black slurries. Well-dispersed slurries could be prepared by treating proper mixtures of carbon black, dispersing agent, and sodium hydroxide for at least 90 seconds in a Waring Blendor. Both the dispersing agent and sodium hydroxide concentrations affected the particle size of the dispersed black. The amounts of dispersing agent necessary to produce fluid slurries were considerably less than the amount required to obtain minimum particle sizes of the dispersed blacks. The best results were obtained with Marasperse CB; other dispersing agents used were Silvacon 490, western hemlock bark extract, Indulin A and C, chestnut extract, Tomlinite, ammonia-base sulfite liquor, redwood-bark dust extract, and Bark 49-126 extract. When up to 3.0% of lignin or lignosulfonic types of dispersing agents was used for preparing the slurries, little trouble was encountered in obtaining rapid and complete deflocculation. 7 tables, 12 figures, and 11 references. E.S.

HESS, CECIL L. An investigation of the homogeneity of isolated native black spruce lignin. Tappi 35, no. 7: 312-20 (July, 1952).

A sample of isolated native black spruce lignin was prepared which was similar to that prepared by Brauns with regard to methoxyl content but had a higher carbon content. This material was separated into a series of fractions by fractional precipitation with dioxane as the solvent and benzene as the precipitant. Precautions were employed to obtain the fractions from a system in equilibrium. By this method a total of 54 fractions was obtained which were combined to give 11 composite fractions. The initial fractions were difficultly soluble and of a darker color as compared with the final fractions, which were quite soluble and of a light bright color. Molecular weights of the fractions were obtained from osmotic pressure measurements. The native black spruce lignin was composed of constituents having molecular sizes from 2800 to 6700. It is probable that the range extended both higher and lower. About one third of the material had a molecular weight of 4500 to 5000; 20% had a molecular weight higher than this value and the remainder was lower. A tentative relationship was also found between the solution viscosity of the fractions and their molecular weights. Heating lignin in either dioxane or methyl Cellosolve solutions caused a small decrease in the solution viscosity. A small decrease in the molecular weight was found, as well as some change in the ultraviolet spectrum of the unfractionated lignin. These changes

were concluded to be of a minor nature as far as the heterogeneity of isolated native lignin was concerned. The methoxyl contents and the carbon and hydrogen values for the fractions differed from those of the unfractionated lignin; neither the ultraviolet visible nor the infrared spectra of the fractions were identical. Differences in the infrared spectra of the fractions occurred primarily in the carbonyl region. It was concluded that isolated native black spruce lignin was a mixture of substances which differed both in their molecular structure and in their chemical constitution. 9 tables, 2 figures, and 26 references. E.S.

MCINTOSH, W. A. Alkali lignin to stabilize slow-break asphalt emulsions. Ind. Eng. Chem. 44, no. 7: 1656-9 (July, 1952).

Although pinewood lignin, trade name Indulin (I), has found wide acceptance as a stabilizer for slow-break asphalt emulsions, very little was known of its compatibility with asphalts from widely differing crudes or the amounts needed to prepare satisfactory emulsions from them, nor was it known whether any correlation existed between crude source, processing variables, or asphalt properties, and the ease of emulsification of the asphalt. Therefore 17 asphalts from widely differing crudes were emulsified, using (I) as the stabilizer. (I) was found to be compatible in every case. The sequestering and dispersing properties of (I) made possible satisfactory slow-break emulsions using resin acid soap as the emulsifier; the formulas which were used are presented. No correlation could be shown between crude source, asphalt properties, or refining variables, and ease of emulsification. Formulas and test results, as well as some asphalt properties and crude sources, are given as a guide to further emulsification studies. (I), because of its low price, ready availability, stability in storage, compatibility with all types of asphalt encountered and all common soap emulsifiers, presents an effective answer to one of the emulsion producer's most difficult problems. 3 tables, 1 figure, and 2 references. L.C.

ROBERT, A., and TRAYNARD, PH. Isolation and study of a nitrolignin. Ann. Inst. Polytechnique Grenoble, numéro spécial: 85-109 (1952). [In French] *cf.* B.I.P.C. 22: 500.

The authors give in great detail the technique used in obtaining their crystalline nitrolignin from poplar and the methods used in determining its molecular weight, its properties, and (partial) constitution. The formula assigned to the nitrolignin is $C_{36}H_{42}O_{27}N_3$; it is aromatic in nature. Its hydrogenation, methylation, bromination, and chromic acid oxidation are described. 4 tables, 3 figures, and 11 references. L.E.W.

SASKATCHEWAN RESEARCH COUNCIL. Lignin and lignite research in Saskatchewan. Can. Chem. Processing 36, no. 6: 62 (June 1, 1952).

Out of 21 projects in hand in 1951, those concerning the fundamental chemical nature of lignin from Saskatchewan white poplar and its conversion to vanillin and organic chemicals and the extraction of wax from various Saskatchewan lignites and the preparation of creosote by distillation of lignite tar are discussed briefly. E.S.

SEN, BISWANATH. Synthesis of lignin model compounds. J. Am. Chem. Soc. 74, no. 13: 3445-7 (July 5, 1952).

The following model compounds have been synthesized in order to compare

their behavior with that of lignin: 2-vanilloylbenzofuran, 2-vanillylidene-3-coumaranone, 3-methoxy-2',4'-dihydroxychalcone, 3'-methoxy-4'-hydroxyflavone, 3'-methoxy-2,4'-dihydroxychalcone, 3'-methoxy-4'-hydroxyflavylium chloride, 3'-methoxy-4'-hydroxyflavanone, and 3'-methoxy-4,4'-dihydroxyflavan. 7 references. E.S.

STEVENS, GEORGE DE, and NORD, F. F. Investigations on lignin and lignification. IX. The relationship between the action of brown rot fungi, cellulose degradation and lignin composition in bagasse. J. Am. Chem. Soc. 74, no. 13: 3326-8 (July 5, 1952); *cf.* B.I.P.C. 22: 178.

A comparative study of the effect of four wood-destroying fungi *(Daedaela quercina, Polyporus sulphureus, Lentinus lepideus,* and *Poria vaillantii)* of the brown-rot type on the dissimilation of cellulose in bagasse has been carried out. The lignins liberated by the cellulolytic action of each of these molds have been characterized; their identity with bagasse native lignin (isolated by the method of Brauns), including their methoxyl contents, is discussed. 3 tables and 13 references. E.S.

STEVENS, GEORGE DE, and NORD, F. F. Investigations on lignin and lignification. X. The isolation and characterization of the native lignin from *Kiri* wood. J. Am. Chem. Soc. 74, no. 13: 3447-8 (July 5, 1952).

Data on the chemical composition, solubility, and infrared and ultraviolet absorption spectra of native kiriwood (*Paulownia tomentosa*) lignin (I) are given. A comparison of (I) and chemical lignins isolated with the aid of 10% alkali (II) and 72% sulfuric acid (III) shows that the methoxyl content of (II) and (III) is higher than that of (I). This discrepancy is considered to be due to either a change in the lignin complex on extraction with strong chemical reagents or to the fact that the total lignin present in (I) is non-homogeneous. The authors believe the latter explanation to be more nearly correct. A similar situation was encountered in the study of the native lignins from oak or birch. 2 tables, 2 figures, and 10 references. E.S.

LIGNIN—ABSORPTION SPECTRA

KRATZL, K., and TSCHAMLER, H. Infrared absorption spectra of wood and insoluble lignins. Monatsh. 83, no. 3: 786-91 (June 15, 1952). [In German]

The infrared absorption spectra of methylconiferylaldehyde; a water-soluble sprucewood fraction; Klason, Willstätter, and isolated native spruce lignin; sprucewood; 6-tritylcellulose; methylcellulose; furfural; and furfural resin have been determined and are discussed in detail. 3 figures and 9 references. F.E.B.

LIGNIN—HYDROGENATION

KLEINERT, TH. The hydrogenation of lignin by means of cyclohexanol. Monatsh. 83, no. 3: 623-8 (June 15, 1952). [In German]

Spruce lignin containing 98.08% solids and 4.37% ash, isolated from spent sulfite liquor according to Drewsen [German patent 67,889 (1891)] was heated with cyclohexanol for three hours at 300°C., giving 0.7 g. of methanol,

16 g. of water, 40.4 g. of benzene, 252.3 g. of cyclohexanol, 23.2 g. of lignin hydrogenation and degradation products, and 1.3 g. of ash. None of the lignin reaction products has been identified. The lignin hydrogenation, which results in a simultaneous dehydrogenation of cyclohexanol, is a time reaction and depends upon the hydrogen ions. The hydroaromatic lignin reaction products (I) act also as hydrogen donors, and the presence of elemental hydrogen counteracts the dehydrogenation of (I), finally forming an equilibrium between aromatic and hydroaromatic lignin degradation products. 1 table and 14 references. F.E.B.

LIGNIN—MICROBIOLOGICAL DEGRADATION

KONETZKA, WALTER A., PELCZAR, MICHAEL J., JR., and GOTTLIEB, SIDNEY. The biological degradation of lignin. III. Bacterial degradation of *alpha*-conidendrin. J. Bact. 63, no. 6: 771-8 (June, 1952); *cf.* B.I.P.C. 21: 170.

A species belonging to the bacterial genus *Flavobacterium* has been isolated which is capable of effecting almost complete degradation of α-conidendrin under the experimental conditions described. Experiments are in progress for the identification of metabolites elaborated in this process. 1 table, 5 figures, and 9 references. E.S.

LIME AND LIMESTONE

FRIIS-HANSEN, JAN. The reburning of lime sludge. Svensk Papperstidn. 55, no. 11: 397-405 (June 15, 1952). [In Swedish; English summary]

The author describes the historical development of the reburning of lime sludge from the causticizing department of sulfate mills from the Swedish pioneer work in 1905 to the highly economical rotary kilns built in Scandinavia since the war. Rotary kilns predominate over shaft kilns. In a comparison of the cost of fresh and reburnt lime, the latter has been found more economical under Scandinavian conditions, even if lime quarries are located in the vicinity of the mill. The quality of the reburnt lime is equal or even superior to that derived from limestone. The factors which influence the economical operation of kilns are outlined, with emphasis on the correct dimensions and installation; heat consumption (most Scandinavian kilns are oil-fired) depends principally upon the moisture content of the sludge fed to the kiln. By using centrifuges for dewatering the sludge, the moisture content may be reduced to 35-37%. Operating data from different mills are included. Experiments with other than rotary-kiln types are mentioned; the results indicate that they are not suitable for the process. 5 figures. E.S.

MACHINERY

METALOCK (BRITAIN) LTD., *London, England.* Surgeons in industry. World's Paper Trade Rev. 137, no. 22: 1611-12 (May 29, 1952).

The Metalock system of cold repair of machinery fractures (first applied in a Texas oilfield in 1935 on cracked castings) is described. The principal advantage of the process is that repairs can be made at the site without dismantling. An example of a fractured M.G. cylinder in 1947 is listed; the estimated delivery time of a new cylinder was given as five years. The Metalock repair was carried out in three days and, today, the same cylinder is still in use and produces perfect paper. 2 illustrations. E.S.

MACHINERY—BALERS

QVEFLANDER, T. An automatic slitting, cutting, and baling machine, system Q/S, for wet mechanical wood pulp at the Karhula groundwood mills. Paper and Timber (Finland) 34, no 6: 246, 248 (June, 1952). [In Swedish]

An illustrated description of the installation is given. 5 illustrations. E.S.

MACHINERY—BLOWERS

THOMANN, ROBERT. The Sulzer system of water extraction for paper machines. Svensk Papperstidn. 55, no. 13: 453-9 (July 15, 1952). [In English] *cf.* B.I.P.C. 18: 524.

Essentially the same description of Turbair blowers as in previous articles is presented, with particular reference to recent European installations. 12 figures. E.S.

MACHINERY—BOARD MACHINES

ANON. Container's new L. A. board machine. Paper Mill News 75, no. 29: 93 (July 19, 1952).

Two pictures of the new cylinder paperboard machine at the Los Angeles mill of Container Corp. of America built by Black-Clawson are presented. E.S.

ANON. M & O modernizes No. 2 machine. Paper Mill News 75, no. 29: 56, 60 (July 19, 1952).

The extensive remodeling of the No. 2 insulating board machine and drying kiln at International Falls, Minn. is described. The project was under the direction of the plant engineering force; Downingtown Manufacturing Co. supplied the machinery for the wet end, and Coe Manufacturing Co. was responsible for the machinery installed in the drying kiln. The machine is now able to produce more than 300,000 sq. ft./day. 1 illustration. E.S.

ANON. Newman making board 24 hours a day. Paper Mill News 75, no. 29: 92 (July 19, 1952).

The seven-cylinder Downingtown board machine at the new mill of Newman & Company Inc. at Philadelphia is described. 2 illustrations. E.S.

PULP & PAPER. Texas mill addition. Pulp & Paper 26, no. 8: 28, 30 (July, 1952).

A brief description of a new seven-vat cylinder machine at the Dallas mill of Fleming & Sons, Inc. is given. The mill uses waste paper and new purchased pulp and makes corrugating material and other grades of board, as well as building papers. The new machine with a daily production of 85 tons will expand capacity from 125 to 210 tons per day. 5 illustrations. E.S.

MACHINERY—CONVERTING MACHINERY

ANON. New equipment, twin tandem arrangement bring big bonus. Boxboard Containers 70, no. 715: 8-10 (July, 1952).

The modernization of a noncommercial setup paper-box plant of a large southern hosiery organization involved the replacement of hand-operated

equipment with semiautomatic Alpha Autofeed units and auxiliary machinery and the installation of these in a U-shaped arrangement which increased the operating efficiency considerably. The layout is described in detail. 3 figures, including a floor plan. E.S.

EGAN, FRANK W. Impregnating and coating of specialty papers. Paper Mill News 75, no. 26: 166-8 (June 28, 1952); Paper Trade J. 134, no. 26: 83-4, 86 (June 27, 1952).

Some of the equipment used in impregnating and machine-coating of specialty papers is described. 7 illustrations. E.S.

LARSON, A. D. Speedfeed coupled to Stokesfeed. Boxboard Containers 70, no. 714: 10-11, 13 (June, 1952).

A. Stein & Co., Chicago has simplified the process of manufacturing setup paper boxes by combining major parts of two modern machines: the infeed conveyor, spotter, and entire gluer of the Speedfeed (New Jersey Machine Corp., Hoboken, N.J.) and the suction conveyor and wrapper of the Stokesfeed (Stokes & Smith Co., Philadelphia). The modification resulted in straight-line, fully automatic production from flat blank to finished box. Details of the new installation are given. 1 flowsheet and 1 illustration. E.S.

MACHINERY—CUTTERS

DOWNINGTOWN MANUFACTURING COMPANY. Downingtown now manufacturing British Masson-Scott cutter and layboy. Am. Paper Converter 26, no. 5: 26, 28 (May, 1952).

The manufacture of a new cutter, which is a development of the Masson-Scott cutter and layboy made in Great Britain, is annouced by the company. The special features of the new Downingtown-Masson-Scott "Supercutter" are described briefly. 3 illustrations. E.S.

MACHINERY—FELTS

ANON. Tammerfors Klädesfabriks Ab follows the developments in the paper industry. Paper and Timber (Finland) 34, no. 6: 249-50 (June, 1952). [In Swedish]

The expansion in the Finnish felt mills at Tammerfors is described; the factory can now supply 70% of the Finnish machine-felt requirements. 4 illustrations. E.S.

HALL, G. BANCROFT. Dryer felts aid in high speed machine operation. Paper Mill News 75, no. 29: 88 (July 19, 1952).

Recent developments in drier felts made necessary by the higher speeds and temperature of modern paper machines include multiple-weave fabrics of a more porous structure, asbestos drier felts reinforced with cotton, prestretched and preshrunk felts with clipper seams, nylon-covered steel cable for joining the hooks in place of metal staples, and six-inch nylon edges on each side of the felt to prevent premature cracking or rotting; improvements in the design of the paper machine have also contributed to the more efficient functioning and increased life of drier felts. E.S.

MOLT, MANFRED. Felt jackets then and now. Wochbl. Papierfabr. 80, no. 11: 406-8 (June 15, 1952). [In German]

The author reviews developments in felt jackets with reference to the patent literature. Felted and certain combined jackets give better results than woven jackets. 1 illustration. E.S.

MACHINERY—HEAD BOX

SERGEANT, S. V. Some flow box investigations. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 1: 49-76; discussion: 77-80 (February, 1952).

In reporting various investigations connected with the flowbox of the high-speed paper machine, the author describes a three-dimensional and its corresponding two-dimensional system of representing weight-variation data; an account of the tracking down of the cause of cyclical variation in weight which had been observed follows. A simple method of determining the distribution in the finished paper of the fibers from one or more of the rotary screens is then described, in addition to a convenient technique for constructing narrow model flowboxes and observing the flow of stock through them. In conclusion, a scale-model flowbox of advanced design (constructed in wood and polymethyl methacrylate resin) and some of the results obtained are discussed. 5 tables, 20 figures, and 3 references. E.S.

MACHINERY—MIXING APPARATUS

OLDSHUE, J. Y. Developments in agitation of paper stock chests. Can. Pulp Paper Ind. 5, no. 7: 118, 120 (July, 1952).

The development of the Greey "Lightnin" paper stock mixer is outlined. The use of vertical, cylindrical, plastic tanks gave the fastest mixing results; the spiral backswept turbine was the most effective impeller design. By using plastic tanks it is possible to agitate only partial volumes of the tank contents; in storage tanks which are larger than necessary for a specific task it is thereby possible to concentrate the power in a limited portion of the tank with savings in power and without reduction in efficiency. 1 illustration. E.S.

MACHINERY—PAPER MACHINE

ANON. Four new Beloit machines. Paper Mill News 75, no. 29: 58, 60 (July 19, 1952).

Brief descriptions are given of the new glassine paper machine at the Rhinelander Paper Co. (*cf.* also p. 90 of this issue), the Yankee machine for dry creped paper at the Hoberg Paper Mills, the new Fourdrinier machine for kraft and special products at the Thilmany Pulp and Paper Co., and the fine paper machine at the Lee Paper Co. 1 illustration. E.S.

ANON. Hopper completes expansion work. Paper Mill News 75, no. 29: 52, 54 (July 19, 1952).

The expansion program of Hopper Paper Co. at Reading, Pa. included a completely integrated Fourdrinier paper machine, stock-preparation equipment, and loading docks. The paper machine was built by Moore and White and will make primarily offset and text paper and paper specialties. Details of the construction are given. 4 illustrations. E.S.

ANON. New machine at St. Regis Cantonment mill. Paper Mill News 75, no. 29: 46, 48, 50, 60 (July 19, 1952).

A detailed description is given of the Bagley & Sewall Fourdrinier machine which is located at the St. Regis Paper Co. at Cantonment, Fla. It is designed for a production of 400 tons per day at a speed of 2200 f.p.m. It has a wire 226 inches wide and an over-all machine length of more than 400 feet. The machine is completely hydraulically controlled. 6 illustrations. E.S.

ANON. Pusey Jones machine at Palatka. Paper Mill News 75, no. 29: 114 (July 19, 1952); *cf.* B.I.P.C. 22: 423.

The new 234-inch Pusey & Jones Fourdrinier machine for producing finished and M.G. papers is described. E.S.

MACHINERY—PASTING MACHINE

CANADIAN PULP AND PAPER ASSOCIATION. *Technical Section. Materials Handling Committee.* Container sealing operation. Pulp Paper Mag. Can. 53, no. 7: 117 (June, 1952).

The efficient sealing operation of corrugated paper shipping containers by National Cellulose of Canada, employing a roller-coater principle, is outlined. 1 diagram. E.S.

MACHINERY—PRINTING MACHINE

ANON. Quick change artist. Am. Boxmaker 41, no. 6: 15-17 (June, 1952).

The versatile Miller two-color printing presses and their automatic feeders are described, which handle both carton stock and box wraps with equal ease and hairline register. Paper Package Co., Indianapolis uses a battery of five Miller presses to produce colorful folding cartons for its parent company, Eli Lilly and Co., which requires a large variety of domestic- and foreign-language cartons with different background color and copy and frequent plate changes. 9 illustrations. E.S.

PAPER CONVERTING MACHINE COMPANY, *Green Bay, Wis.* New four-color aniline printing press designed for high speed printing on 36-inch web widths. Am. Paper Converter 26, no. 6: 21, 23 (June, 1952).

The unit and its operation are described. 2 illustrations. E.S.

HARRIS-SEYBOLD COMPANY, *Cleveland.* Harris-Seybold unveils new four-color rotary letterpress. Boxboard Containers 70, no. 714: 41 (June, 1952).

The unit, called T465, is especially suitable for high-quality printing on paperboard stock for folding cartons; it has an exceptionally high board-feeder pile and a new quick board-loading device, as well as a double delivery system. 2 illustrations. E.S.

MACHINERY—PUMPS

ALLIS-CHALMERS MANUFACTURING COMPANY, *Milwaukee.* Mills save precious floor space by using vertical pump for paper stock. Chem. Processing 15, no. 7: 14-15 (July, 1952).

Conservation of floor space was one of the principal reasons why Thil-

many Pulp and Paper Co. used a vertical stock pump in a recent expansion for draining stock at 14% consistency from storage tanks. A feeder vane assembly (as a part of the pump) breaks up solid slugs of stock before they reach the pump impeller and clog it. The installation is described briefly. 2 figures. E.S.

EVANS, C. G. Pumps for papermills. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 1: 147-70; discussion: 170-2 (February, 1952).

Certain design features and application problems of the pumping plant are outlined, and installation pitfalls and possible maloperation are pointed out. Suction performance and requirements, including cavitation conditions, are discussed, and methods for avoiding dangers in this field are indicated. The author describes the effects of varying head conditions, including the results of multiple/solo head operation and frequency variation; he draws attention to partial-load operational dangers and presents methods of adapting installed units to modified conditions. Desirable pump features for paper pulp are detailed and illustrated, and an outline of available types of centrifugal pumps for paper-mill use is included. 12 figures. L.C.

MACHINERY—ROLLS

LEIGHTON, RALPH M. Measuring the density of rubber-covered paper mill rolls. Tappi 35, no. 7: 309-11 (July, 1952).

There are in use three instruments for testing rubber-covered rolls: the Shore Type A Durometer, the Adams Densimeter, and the Pusey & Jones Plastometer. Tabular data are presented to show the differences in readings obtained with all three types by one company; there is no over-all comparison and correlation of the three measuring instruments. The Plastometer seems to give the best and most accurate readings; it is the most widely recognized instrument employed for the density measurement of rubber-covered paper-mill rolls in many countries. Reference is made to a meeting of the Subcommittee of the Roll Group of the Rubber Manufacturers Association in 1950 for the purpose of standardizing plastometers. Difficulties in checking the readings on different instruments were traced to the original gages which were found to change readings with use and age. A new type of dial gage has been developed by the manufacturers; directions for the general care of the instrument, the use of the new dial-gage indicator, and the procedures for checking questionable plastometers are given. 3 tables. E.S.

MACHINERY—SCREENS

SCHENK, HARRY F. The care of your stainless steel screen plates to insure high sustained capacities and long plate life. Southern Pulp Paper Manuf. 15, no. 7: 88 (July, 1952).

The life of stainless-steel screen plates depends on their care and maintenance. Useful directions for their upkeep are given. E.S.

MACHINERY—SLICE

SIMONDS, D. R. Inlets and slices. Paper Mill News 75, no. 26: 106, 108, 110 (June 28, 1952); Paper Trade J. 134, no. 26: 56-8 (June 27, 1952); Southern Pulp Paper Manuf. 15, no. 7: 74, 76, 78-81 (July, 1952).

Figures are given to reveal the extremely wide range of flows on various

paper machines which must be met by the machine designer. Such factors as headbox consistency, proper inlet and slice, importance of approach flow, rectifier rolls, direction of stock, position of lip, and operation under a vacuum are discussed. The requirements for all slices, regardless of type of paper machine, include accessibility for cleaning, freedom from corrosion, compactness of box, and uniformity of delivery from inlet to slice. In conclusion, a new development, the Beloit air-cushion inlet, and its advantages are described. E.S.

MACHINERY—SUCTION BOXES

POIRIER CONTROL COMPANY. Poirier master syphon system for modern vacuum control. Paper Mill News 75, no. 29: 63, 66 (July 19, 1952); *cf.* B.I.P.C. 22: 183.

The development of the system is outlined; it involves the use of an observation plate by means of which the process of water extraction at the flat suction boxes of the wet end of a Fourdrinier machine can be directly observed. E.S.

MACHINERY—WEB-TENSION CONTROL

ANON. G-E paper tensiometer gives closer control of tension. Paper Mill News 75, no. 29: 90 (July 19, 1952).

The installation of a tensiometer at the calenders of the P.H. Glatfelter Co. at Spring Grove, Pa. and the resulting advantages are described. 1 illustration. E.S.

MAGNETS

MERWIN, R. F., and HOFF, R. C. Tramp iron problem in paper industry. Paper Mill News 75, no. 26: 163-5 (June 28, 1952); Paper Trade J. 134, no. 26: 64-6 (June 27, 1952); Paper Ind. 34, no. 4: 525-6 (July, 1952).

The need for properly designed and positioned magnetic separators in pulp and paper processing and available types of electrically energized or permanent magnets are discussed. E.S.

MATERIALS HANDLING

ANON. "No hands"; fork trucks slash handling costs in corrugated plant. Am. Boxmaker 41, no. 7: 17-18 (July, 1952); Boxboard Containers 70, no. 716: 50-1 (August, 1952).

The handling of heavy kraft paper rolls at the corrugated and solid-fiber box plant of Eastern Box Co., Baltimore is done by three battery-powered fork trucks and electric Transtackers and platform transporters. The fork trucks unload and store the rolls, and the other equipment is employed throughout the production operation and for a variety of maintenance assignments. A 40% increase in storage capacity and a 90% reduction in handling costs resulted from the use of the mechanized equipment. 4 illustrations. E.S.

G. H. GASCOIGNE COMPANY, LTD. *Reading, England.* New paper roll stacker. World's Paper Trade Rev. 137, no. 22: 1605 (May 29, 1952).

A "through"-system stacker, consisting of a rack with several bays, and the method of lifting and storing the rolls on rails with a slight upward slope

at the opposite (unloading) ends are described; it can be constructed for different sizes of paper or other types of rolls. 1 illustration. E.S.

JENKINSON, N. A. Mechanical aids to productivity. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 1: 107-11; discussion: 112-14 (February, 1952).

The author presents a general discussion of the advantages of American materials handling with mechanical aids adapted to the needs of each job. He points out that manual materials handling is the largest single item of labor cost, is a frequent cause of accidents, and is responsible for a large part of job fatigue. L.C.

METERS AND RECORDERS

RECORD ELECTRICAL COMPANY LIMITED, *Altrincham, Cheshire.* "Cirscale" tachometers and indicators. World's Paper Trade Rev. 137, no. 17: 1244 (April 24, 1952).

The instruments and typical applications in the paper industry are discussed briefly. 2 illustrations. E.S.

MICROSCOPY (ELECTRON)

CHIAVERINA, J.-O. Use of the electron microscope in the study of papermaking fibers. Ann. Inst. Polytechnique Grenoble, numéro spécial: 136-7 + 1 plate (1952). [In French]

The use of the electron microscope for the study of beaten sulfite fibers and cotton is discussed very briefly. 5 electron photomicrographs. L.E.W.

MOREHEAD, FREDERICK F. The high-contrast (wide-field) electron microscope objective and fiber replicas. Textile Research J. 22, no. 6: 379-84 (June, 1952).

The high-contrast, low-magnification lens of Hillier for the electron microscope is shown to give an excellent performance in the study of fiber replicas. Different types of replicating materials are compared and their advantages and drawbacks are noted. One unexpected observation is that metal shadowing adds little additional information in the case of soiled fibers, as is shown by direct comparison in the same field. This is caused by the mechanics of replica formation—i.e., by the fact that the impurities are pressed into the replica. Stereo is shown to be very useful in determining the exact location of dirt on a soiled fiber. 13 figures and 6 references. E.S.

MICROSCOPY (PHASE CONTRAST)

RICHARDS, OSCAR W. Phase microscopy. Wallerstein Labs. Communs. 15, no. 49: 155-62 (June, 1952).

Following a historical introduction of the development of phase microscopy (I) and a brief description of the instruments available for this purpose, applications to yeasts, bacteria, and filamentous fungi are discussed to illustrate some of the possibilities of (I) in the brewing industry. 17 figures and 10 references. E.S.

MILL MANAGEMENT

ELLIOTT, NORMAN J. Watch those little losses. Boxboard Containers 70, no. 715: 40, 42-3 (July, 1952).

Small losses repeated many times daily over the course of a year may represent the equivalent of a substantial portion of the firm's profits. The author discusses some of the factors which may affect cost in the paper-box industry under the headings: material, labor, overhead, and lack of internal control, including lost sales, taxes, and poorly trained personnel. E.S.

FAIRFIELD, M. C. M. & O. uses remote control aptitude tests. Paper Trade J. 135, no. 1: 38-9 (July 4, 1952).

Field administered psychological aptitude tests of screened applicants for sales positions are now being succesfully used by the Insulite Division of the Minnesota and Ontario Paper Co., Minneapolis, Minn. The final selection of the trainee is based to a great extent on the results of these tests, but even greater emphasis is placed upon his record of achievement, reports from visits with his neighbors and past employers, and character references. L.C.

FERGUSON, SYDNEY. The problems of management in the paper industry today. Paper Mill News 75, no. 26: 147 (June 28, 1952); Paper Trade J. 134, no. 26: 103-6 (June 27, 1952); Southern Pulp Paper Manuf. 15, no. 7: 70, 73-4 (July, 1952).

The factors which must be weighed carefully before the contemplation of the construction of a new mill are discussed under the headings: a supply of wood and water, labor, taxes, capital funds for building, and a good site. Management must provide leadership and create morale; the superintendent is in an excellent position to be of assistance in this respect. He can appreciate what management tries to do, and he is close enough to the hopes and aspirations of the employee. E.S.

KIESSLING, JEROME J., and LENNON, VICTOR A. Scientific training for envelope machine adjusters. Am. Paper Converter 26, no. 7: 9-10, 47 (July, 1952).

The envelope industry, by co-operative effort, has embarked on a program of enlightened selection and scientific training of well-qualified machine adjusters. To select adjuster applicants most likely to succeed (without investing in the type who will never make the grade or the one who will make the grade but will not stick to the job), tests for evaluating intelligence level, mechanical aptitude, psychological make-up, and visual abilities were designed. A scientific training course based on methods employed during the last war is being developed, including manuals and charts for basic information; the instruction will be given by trained specialists educated in the proper methods in the plants of the individual companies. E.S.

PACKAGING

MINNEAPOLIS-HONEYWELL REGULATOR COMPANY. Rust protection by electronic device. Packaging Parade 20, no. 234: 88-90 (July, 1952).

This company has perfected a small relative-humidity indicator which is sealed inside of vaporproof, military-equipment containers to warn of changes in humidity as small as 0.0001% during storage. The tiny plastic and gold-leaf grid sensing unit in each package can be connected to an external portable meter which registers changes in moisture content within the package. 1 illustration. L.C.

MODERN PACKAGING. Help-yourself textiles. Modern Packaging 25, no. 11: 77-83 (July, 1952).

Soft-goods packaging is being designed with the no-clerk supermarket and the short-staffed specialty store in mind. Nylon hosiery is packaged in a 22-inch "pilferproof" tube; handkerchiefs, T-shirts, socks, sweaters, kitchen cottons, and ready-to-sew dresses are wrapped in colorful cellophane envelopes; diapers are packed in dozen-unit boxes. All eight items are packaged to provide the selling unit, to protect the product, to give the essential information that was formerly supplied by a salesperson, to establish brand identity, and to attract attention to that brand amidst increasing competition. 9 illustrations. L.C.

PAXTON, REX. Fundamentals of good packaging design. Paper Mill News 75, no. 27: 8, 10 (July 5, 1952).

Good package designs are the key to the fundamentals of good merchandising; increased consumption is brought about by increased availability. Mass production and mass distribution would be impossible without modern packaging, which replaces the retail clerk in many successful stores. The correct carton must appeal to the buyer, create good will, increase consumption, and protect the contents until they are used up. E.S.

PAPER—COATED

BLACK, W. C. Water-resistant starch coatings. Tappi 35, no. 7: 44A, 46A, 48A, 50A, 52A (July, 1952).

Currently suggested methods for increasing the wet-rub resistance of starch films and coatings are reviewed, including the addition of either water-resistant materials or those which combine with the starch to give a product with changed, redispersing properties. The factors affecting starch-resin coatings (cooking procedures, time, concentration, pH, water-holding ability of starch, type of resin and starch, and operational variations) are discussed briefly; since so many factors enter into the development of wet-rub resistance, each application must be studied separately, with consideration of available equipment and operational requirements. In conclusion, reference is made to some tests for evaluating the results. 14 references. E.S.

FROST, F. H. The future requirements of starch from the standpoint of the paper coater. Tappi 35, no. 7: 16A, 18A, 20A, 22A (July, 1952).

In the form of 10 questions the author poses problems of an entirely practical character on the relationship between variables in the starch coatings produced at the S. D. Warren Co. and fundamental starch chemistry, which another speaker (T. J. Schoch) discussed (see page 925). 14 figures. E.S.

GALLAGHER, W. C. Modifying the flow properties of starch-pigment coatings. Tappi 35, no. 7: 38A, 40A, 42A, 44A (July, 1952).

The author discusses the factors which influence the flow properties of high-solids pigment coatings in which starch is used as the adhesive, including type of pigment, type and amount of adhesive, type and amount of deflocculating agent, presence of additives, machine speed, and temperature of the coating mixture. Data are presented on both low- and high-shear

viscometers which show that the rheological evaluation may be used to indicate the degree of starch modification necessary to produce certain flow properties. The effect of different additives on certain flow characteristics is reviewed, with particular reference to the improvement of the thixotropic characteristics of the coating. The study shows that it is often a matter of a simple change in the properties of the starch or the coating-color formulation to transform an unsuitable coating color into an acceptable one. 9 tables and 2 references. E.S.

MAKARIUS, THEODORE. Coated paper on the press. Modern Lithography 20, no. 7: 57, 117 (July, 1952).

Directions are given for preventing offset, penetration of ink into paper, picking and tearing, and curling of the paper on the sides when offset coated paper is run on the printing press. E.S.

MASON, M. J., and HORST, R. J. Use of the Corn Industry viscometer for the evaluation of starches and enzymes. Tappi 35, no. 7: 64-6A (July, 1952).

Examples are given to show that the Corn Industries viscometer is very adaptable to various types of converting schedules of cornstarch with enzymes commonly used in factory practice. The conversions can be carried out on starches cooked at both low- and high-solids concentrations with good reproducibility of results. Variations in the converting characteristics of both modified and unmodified starches can be detected, so that the starch consumer can make adjustments for differences before factory conversions are made. The liquefying action of various enzymes can be followed by continuously recording the viscosity fluctuations throughout the conversion cycle. 4 tables, 3 figures, and 2 references. E.S.

MASSEY, PETER J. New horizons in paper coating. Tappi 35, no. 7: 8A, 10A, 12A, 14A (July, 1952).

The author discusses the development of printing coatings and functional coatings (waxed and oiled papers, asphalt coating papers, solvent resin coatings, rubber and other elastomer latices, and thermoplastic coatings), the opportunities which they offer to the printer and paper converter, and requirements for their further exploitation. E.S.

NEWTON, J. M. Oxidized starch for the paper industry. Tappi 35, no. 7: 58A, 60A, 62A, 64A (July, 1952).

A review is presented of the methods of manufacture of industrial oxidized starches prepared for the paper industry. Their chemical and physical properties are discussed, as well as application methods for making the best possible use of their specific characteristics, including tub and calender sizing. Their use as the adhesive in clay coatings is also considered. 3 figures. E.S.

SCHOCH, THOMAS JOHN. Fundamental developments in starch for paper coating. Tappi 35, no. 7: 22A, 24A, 26A, 28A, 30A, 32A, 34A, 36A, 38A (July, 1952).

The author discusses the possible relationship between the molecular structure of starch and its behavior in clay coatings, including the results of starch modifications and the desirable and undesirable characteristics of

various modified starches and dextrins. In the author's opinion, optimum results will finally be realized by the proper combination of two different starch modifications: (1) fragmentation of the starch molecule only far enough to produce the required viscosity at the desired starch concentration, and (2) warping the linearity of the starch substance just sufficiently to overcome the unpleasant effects of retrogradation without sacrificing the advantages of some reassociation in the finished coating. In conclusion, brief answers are given to Frost's 10 questions, although some are also covered in the main text. 17 figures. E.S.

WHITE, T. A., WOOD, L. J., and SMART, W. F. Dextrines as coating adhesives. Tappi 35, no. 7: 52A, 54A, 56A, 58A (July, 1952).

The author reviews the general characteristics of the different types of dextrins (British gums and yellow and white dextrins) and their properties, with particular emphasis on their use in pigment coating. A comparison is made with oxidized and enzyme-converted starches commonly used for this type of coating; commercial cornstarch products were used in each case. In general, the white-corn dextrins offer characteristics of interest to both off-machine and machine coaters. Higher strengths for lower viscosities can be obtained in this way than with any other type of conversion. A degree of control and versatility is offered by the dextrins which cannot readily be obtained with any other conversion method. 5 figures. E.S.

PAPER—CONVERSION

ANON. Bemis Brothers modernizes. Paper Trade J. 135, no. 2: 12 (July 11, 1952); Southern Pulp Paper Manuf. 15, no. 8: 76 (August, 1952); Tappi 35, no. 8: 92-4A (August, 1952); Am. Paper Converter 26, no. 8: 42 (August, 1952).

The recent modernization of facilities of Bemis Bro. Bag Co., Peoria, Ill. involved the installation of a new clay-coating plant for the production of coated paper for flour bags, Kohler unwind and winder reels, and two Dilts double embossers. A brief description of the equipment is given. 3 illustrations. L.C.

SNYDER, HARLAN K. A straight line . . . new impetus toward perfection. Am. Paper Converter 26, no. 6: 9-11 (June, 1952).

The streamlined operations of the new, one-story factory of the Central Waxed Paper Co., Chicago are described. 7 figures. E.S.

PAPER—MERCHANDISING

AMERICAN PAPER MERCHANT. Dudley Paper Co. Am. Paper Merchant 49, no. 7: 16-17, 46; no. 8: 16-17, 58-9 (July, August, 1952).

The Dudley Paper Co. with headquarters in Lansing, Mich. and a branch office in Saginaw handles coarse and fine papers. The present article is devoted to the methods of operation on which the company has built its prestige. Among its strong points are its cost-control system, its daily-products division, and a mill-brand promotional program on its fine papers. 3 illustrations. E.S.

PAPER AND PULP INDUSTRY

AMERICAN PAPER AND PULP ASSOCIATION. Planned new ca-

pacity. Tappi 35, no. 7: 80A, 82A, 84A (July, 1952); *cf.* B.I.P.C. 22: 678.

A tabulation of a revised survey of new capacity for 1951 through 1955 for the paper and board industry and a summary of new capacity for wood pulp during the same period are presented. The total paper and board capacity at the end of 1952 is estimated at 26,532,865 tons and that of wood pulp at 19,692,536 tons. Over-all totals of planned capacity increases are further analyzed according to grade of paper, board, and pulp and percentage of increase. 5 tables. L.C.

ATCHISON, JOSEPH E. Europe's paper problems. Pulp & Paper 26, no. 7: 43 (July 1, 1952); *cf.* B.I.P.C. 22: 840.

Essentially the same information as in the previous article is presented, although in much condensed form; the objectives of the aid program to Marshall-Plan countries and the possibilities of the future long-range program are reviewed. A diagram showing the per capita consumption of selected countries for 1913, 1929, and 1950 is included. 1 table. E.S.

CHEMICAL ENGINEERING. Raw material supply shapes paper progress. Chem. Eng. 59, no. 7: 193-4 (July, 1952).

In a general review entitled "Chemical process industries must face these problems of the future," the section devoted to the more important issues involving the pulp and paper industry deals particularly with the need and means for increased wood supplies and more efficient utilization of the presently available raw material. E.S.

EDWARDES, VANCE P. Opportunities in the paper industry. Tappi 35, no. 7: 119-21A (July, 1952).

In an address to the graduates of the Pulp and Paper Department of the State University of New York, College of Forestry, the author points out challenging opportunities to solve operational problems in pulp and paper manufacture. In conclusion he gives some advice on personnel problems. L.C.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. Wood pulp. Unasylva 6, no. 1: 21-8 (March, 1952); *cf.* B.I.P.C. 22: 262-3.

The developments in wood pulp production, trade and prices in 1951, and trends indicated at the beginning of 1952 are presented for North America (United States and Canada) and western Europe (Finland, Sweden, Norway, Western Germany, France, Austria, Italy, and the United Kingdom). Production and exports of wood pulp exceeded the 1950 figures in North America, with United States imports dropping slightly. On the whole, production and exports of pulpwood exceeded the 1950 levels in western Europe with the exception of Western Germany, whose exports dropped to almost zero in 1951, and Poland, Yugoslavia, and Sweden, whose exports diminished appreciably. 3 tables and 1 figure. L.C.

HAYES, MILTON J. Financial aspects of paper mill operation. Paper Mill News 75, no. 26: 101, 103-4 (June 28, 1952); Paper Trade J. 134, no. 26: 59-61 (June 27, 1952).

A short review of the present economic conditions in the paper industry

is presented, with reference to the downward trend from recent high levels and suggestions to top management for the adoption of measures to improve profit margins. Until the trend toward lower net profits is reversed or stabilized, caution must be exercised in all decisions. E.S.

NATIONAL INDUSTRIAL CONFERENCE BOARD. Growth patterns in paper industry. Paper Mill News 75, no. 28: 8, 10, 12 (July 12, 1952).

Eight growth-pattern charts are presented for total paper and board, newsprint, printing and converting paper, fine paper, coarse paper, tissue paper, and construction paper and board covering the period 1890-1950; these show that, with the exception of newsprint, all branches have a robust current rate of growth and that these rates have been maintained for the last 40 years. The percentage deviation from trend is also depicted graphically. A comparison with other series in tabular form indicates that only aluminum and natural-gas production show greater current growth rates than paper and board, and that the growth rates of most other items have dropped considerably since 1910. 2 tables and 8 charts. E.S.

PULP AND PAPER MAGAZINE OF CANADA. Canada's book imports analysed. Pulp Paper Mag. Can. 53, no. 7: 106 (June, 1952).

A determined attempt to capture the Canadian book market from the United States is being made by the British publishing industry which can supply books at an average of a dollar each. Factors entering into the competition are discussed, and American and British sales are compared. L.C.

RITCHIE, JAMES L. United States requirement of wood pulp for papermaking. Paper Mill News 75, no. 30: 10, 12-14 (July 26, 1952); Tappi 35, no. 8: 10A, 12A, 14A, 16A (August, 1952).

Based on the latest available census data, four pulp-dependent industries (the paper industry, the rayon industry, the printing and publishing industry, and the converted paper-products industry) account for one tenth of the economic wealth generated annually by the entire American industrial economy. Together, these industries employ 8.5% of all industrial wage earners; their combined payrolls are equal to 9% of the aggregate payroll of the entire industrial economy of the country. At the beginning to the 20th century, approximately one third of the land area of the United States was forested; forest lands still constitute about one third of the country's total land area. There has been no significant shrinkage in the land area available for the growth of the national wood requirements. More effective utilization of the available wood resources is helping to meet the mounting requirements of wood pulp. The growth and pattern of wood-pulp requirements and supply, as well as the current supply-demand relationship are discussed. The current oversupply of pulp and paper is attributable to two factors: the operation of an inventory cycle in pulp products and the operation of an expansion cycle in pulp and paper products. The industry's basic problems, after a dozen years predominantly characterized by supply shortages, now appears to have become one of creating—through product research and market development—a demand for its products adequate to insure, on a continuing basis, a profitable utilization of its productive expanded facilities. 3 tables. E.S.

RITCHIE, JAMES L. World pulp trends. Pulp & Paper 26, no. 7: 39 (July 1, 1952).

From a position of almost continous oversupply in world markets, the supply-demand relationship of market pulp has shifted to one of a far more delicate balance; this shift is more permanent than transitory market changes which are bound to occur during temporary periods of market readjustments. In the future, the market-pulp consumer will have to look first and foremost to the security of his fiber supply. 1 statistical table. E.S.

WALDO, HENRY C. Pulpwood price control. Paper Trade J. 135, no. 1: 31-2, 34-5 (July 4, 1952).

The author discusses the problem of the development and administration of pulpwood, pulpwood contract service, and related product price orders. The General Ceiling Price Regulation of Jan. 26, 1951 and its effects are described, and CPR Nos. 34, 38, 48, 102, and 107 are discussed in detail. L.C.

PAPER AND PULP MILLS

ANON. Description of No. 3 paper machine and auxiliary equipment at Alliance. Paper Mill News 75, no. 29: 74, 76, 119 (July 19, 1952).

The new building and paper machine No. 3 at the Lybster mill of Alliance Paper Mills Ltd. at Merritton, Ont. are described. The machine was built by John Inglis Co. Ltd. of Toronto and includes a stainless steel headbox and slice made by Valley Iron Works and a special winder made by Jagenberg-Werke in Germany; it is a 122-inch wide Fourdrinier of a modified Pusey & Jones design for lightweight specialties and carbonizing, onion skin, and glassine papers. A new steam plant had to be erected to increase the steam-generating capacity, and a new steam line to carry the steam to the new building had to be built. E.S.

ANON. New Beloit machine at Lee. Paper Mill News 75, no. 29: 69-70, 73, 77 (July 19, 1952); *cf.* B.I.P.C. 22: 759.

A similar description of the new Fourdrinier machine and other changes at the Lee Paper Co., Vickburg, Mich. as in the previous reference is given. 8 illustrations. E.S.

ANON. Pictures of the Billingsfors-Langed Aktiebolag. Svensk Papperstidn. 55, no. 12: 439-41 (June 30, 1952). [In Swedish]

The four mills which form the company are presented in a series of 10 illustrations. E.S.

CANADIAN PULP AND PAPER INDUSTRY. The Powell River Company. Can. Pulp Paper Ind. 5, no. 7: almost entire issue (July, 1952).

The story of the "world's largest newsprint plant" consists of the following articles which are listed by authors and titles: Anon. History, p. 10-18; Anon. Three periods of major development (1910-1914, 1923-30, 1945-52), p. 20, 24, 26, 28, 30, 33-4, 36, 38, 40; Anon. The men who guide Powell River Company, p. 42, 44, 46, 48; Anon. Production of logs—Forest management,

p. 50, 52, 54; Anon. The movement of logs and paper—Transportation, p. 56; Phipps, S. G. The system of handling wood, p. 58, 60, 62, 64-5; Anon. Two Waterous-built grinders introduce automatic operation, p. 66; Cramb, W. F. Paper machine stock proportioners, p. 68, 70; Williams, S. C. Powell River's No. 8 machine, p. 72-4, 76; Chard, A. E. Water power and electrical energy, p. 78-9; Ford, Sherwood D. The unique Scanlon Dam, p. 80, 82-3; Walters, Norman. Distribution of electrical power, p. 84, 86; Julson, Mel. Efficient instruction enables crew to handle new electrical equipment, p. 88; Douglas, J. B. Steam plant extension, p. 90-4, 96; Anon. Subsidiary operating division, p. 98; Anon. Marketing, p. 100-1; Patterson, R. F. Research, development, and technical services, p. 102-3; and Anon. A modern metropolitan area—Population, p. 104, 106, and Powell River provides the amenities—socialities p. 108, 110. Numerous illustrations are included in all the articles. E.S.

MACKELLAR, J. F. New paper machine drive at O & M. Paper Mill News 75, no. 29: 110-11, 116 (July 19, 1952); *cf.* B.I.P.C. 22: 124, 583.

The modernization program of the Kenora, Ont. mill is briefly outlined. E.S.

PULP AND PAPER MAGAZINE OF CANADA. 71 years in the paper business. Pulp Paper Mag. Can. 53, no. 7: 94-6 (June, 1952).

The article, based on information obtained from John F. Taylor, who started work with the E. B. Eddy Company in 1881, is an account of colorful and humorous incidents in the long history of the company. 1 illustration. L.C.

PAPER CONDITIONING

MAKARIUS, THEODORE. Paper seasoning for register work. Modern Lithography 20, no. 6: 67, 141 (June, 1952).

Certain pitfalls in paper seasoning in printing plants are outlined, with particular reference to the effect of very dry stock exposed to pressroom humidities. When a skid of 70-pound paper (approximately 10,000 sheets) is hung in the pressroom, the relative humidity of the room may be lowered to such an extent that jobs—which were running well on the press beforehand—will start to pick, stick to the blanket, or even begin to offset on account of static. The pressroom should never be used as a stockroom for unseasoned stock or finished jobs; a separate seasoning room should be installed whenever possible. Paper that lies flat in the case or on a skid will run satisfactorily without hanging, if the sheets are covered constantly when not being run through the press. E.S.

PAPER MACHINE OPERATION

CURTIS, J. R. Increased production from existing machines. Paper Mill News 75, no. 26: 112-14, 116-18 (June 28, 1952); Paper Trade J. 134, no. 26: 87-8, 90, 92, 94 (June 27, 1952).

Of the two basic methods for increasing production, the installation of new equipment is the surer and easier, whereas an increase of output from existing machinery is more difficult; however, the net return per dollar invested is usually greater. Following an analysis of existing production, a program should be developed which does not adhere to either approach exclusively, but exploits both methods to advantage. The elimination of a

bottleneck which slows up production is discussed under the three points: definition of the problem, engineering and application, and follow-up. The special problems involved in increased paper-machine production are analyzed under the headings: speed (operating bottlenecks and equipment limitations), lost time (machine snaps and breaks, clothing changes, routine maintenance, engineering changes, and accidents), and waste (excessive waste on turnovers, damage in handling rolls and finished product, rejections for poor quality, excessive waste in converting, and inability to use full machine trim). Suggestions for improvements are given. 3 figures. E.S.

PAPER SPECIALTIES

ANON. Really scuffproof labels. Modern Packaging 25, no. 11: 98-9 (July, 1952).

Labels on the ReaLemon-Puritan Co.'s fruit juice bottles were scuffed and marred by the time the product reached its retail outlets; the originally striking black background became especially unsightly. New labels are printed on sheetfed rotary and flat-bed letterpress equipment. A decorative and protective acetate-base coating is applied on high-speed coating machines which subject the printed and coated sheets to 375°F. temperatures for full development of the film properties. Close control of these properties is maintained by frequent control testing, with particular attention to the factor of abrasion resistance. The new plastic-coated labels withstand between 400 and 500 revolutions of the test wheel as opposed to the 25 or 30 wear-cycle resistance of the original label. 3 illustrations and 1 sample sheet. L.C.

ATKINSON, W. B. Industrial uses of paper in the electrical industry. Paper Trade J. 135, no. 4: 21-2, 26, 28, 30, 32-3 (July 25, 1952).

Paper has played an important role in the manufacture of electrical apparatus since the start of the electrical industry. The following papers used by the Westinghouse Electric Corp. and some of their general properties are described: manila rope, rag-base, fish and glassine papers, cellulose paper pulps, coil-kraft paper, "Durocel," hydrated kraft pressboard, a sulfite-and-kraft meter-chart paper, absorbent kraft-pulp paper, fullerboard, ferrous and nonferrous asbestos papers, and shellac-treated kraft paper. A chart listing 54 common kinds of paper, together with some of their respective specific applications and properties, is included. Another chart gives specifications for the various types of paper used by Westinghouse. 2 tables and 7 illustrations. L.C.

DAY, FREDERICK T. Paper conversion and usage. No. 30. Table stationery. World's Paper Trade Rev. 137, no. 17: 1241-2 (April 24, 1952); *cf.* B.I.P.C. 22: 687.

The author discusses some of the many paper products used by the housewife and catering, food, and similar industries, with particular reference to lace-paper doilies, table sets, baking cases, and household rolls. 2 illustrations. E.S.

DAY, FREDERICK T. Paper conversion and usage. No. 32. Manufacture and uses of corrugated material. World's Paper Trade Rev. 137, no. 21: 1506, 1508 (May 22, 1952); *cf.* B.I.P.C. 22: 826.

A brief review of the manufacture of single-faced corrugated papers and boards and their principal applications to protective packaging and as a most versatile display medium is presented. Waste paper is listed as the principal raw material employed. 1 illustration. In a letter to the editor (*ibid.* 137, no. 23: 1702 [June 5, 1952]), R. Ducé of the Cellulose Development Corp. (Celdecor) mentions the improvements in strength which result when a mixed furnish of 50% waste paper and 50% semistraw pulp is employed. 1 illustration. E.S.

DAY, FREDERICK T. Paper conversion and usage. No. 33. The manufacture and uses of crêpe papers and crêpe kraft. World's Paper Trade Rev. 137, no. 23: 1680-1 (June 5, 1952).

The use of creped paper as a versatile display material and of creped kraft for packaging purposes is described briefly. 1 illustration. E.S.

DAY, FREDERICK T. Paper conversion and usage. No. 34. The manufacture and uses of waxed papers and board material. World's Paper Trade Rev. 137, no. 25: 1806, 1808, 1811 (June 19, 1952).

Today almost any grade of base paper in various basis weights, from the thinnest tissues to heavy krafts and carton materials, may be coated with an even application of wax, and the operation presents no difficulty. A large variety of waxes and wax compounds is available to suit the different requirements for functional packaging, particularly foodstuffs and machine parts. The many varieties of waxed papers and their specialized coatings are reviewed briefly, with emphasis on the importance of consulting the manufacturer of waxed paper when new products are involved. In conclusion, wax-laminated bags and cartons are mentioned. 1 illustration. E.S.

EASTMAN KODAK COMPANY. Photographic paper produces positive print without using negative. Chem. Processing 15, no. 7: 13 (July, 1952).

A photographic (reversal) paper is described in which the emulsion reacts to light in directly the opposite way from regular printing paper used by photographers; it allows production of positive prints with conventional equipment and processing. When reversal paper is exposed to light and developed in fogging developer, unexposed areas turn black; in exposed areas, the fogging action of the developer is inhibited and a positive image results. Possible applications include the use of the paper in photostat equipment. E.S.

FAGG, ELIZABETH. Paper cups in reserve. Am. Forests 58, no. 7: 28, 33 (July, 1952).

Under government encouragement, paper cup and container manufacturers have set aside 25 million paper food and drink utensils in 20 most likely target areas of the country for use in case of atomic bombing. 6 illustrations. L.C.

FEGERT, A. G. Direct-Image offset plate. Printing Equip. Engr. 82, no. 9: 80, 106-9 (June, 1952).

A brief description is given of the Standard Rate and Data Service Direct-Image process (invented by C. L. Botthof and co-workers), which was developed primarily for directory work. It employs a printing plate con-

structed of a moisterproof tagstock base to which a grained aluminum-foil facing 0.003-inch thick is laminated. Applications for patents covering the process and the plate have been made. 2 figures. E.S.

MONSANTO CHEMICALS, LTD. Diphenyl impregnated wrappers; aid to preservation of citrus fruits. World's Paper Trade Rev. 137, no. 25: 1800, 1802, 1804 (June 19, 1952).

The favorable results obtained with diphenyl-impregnated tissue wrappers for citrus fruits, the most suitable impregnating process, and toxicological considerations in the manufacture and use of treated wraps are discussed. In conclusion, the physical properties of diphenyl are listed. 3 tables and 1 reference. E.S.

Moss, D. Waxed paper as a protective packaging material. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 1: 201-8; discussion: 209-10 (February, 1952); *cf.* B.I.P.C. 22: 191.

The protective properties of waxed paper for packaging are described, and the four methods of wax treatment are detailed: complete impregnation, waxing on one side, dry waxing, and wax lamination with paper and foils. The author discusses the chief applications of these types of materials, among them, the wrapping of bread, coffee, soap, packaged moisture-sensitive goods, razor blades, military spares, biscuits, and products requiring protective packaging. 1 figure and 1 reference. E.S.

PAPER SALES. Rust inhibitor paper. Paper Sales 12, no. 7: 18-19 (July, 1952).

Volatile corrosion inhibitor paper (VCI), its application, and its advantages are described. A specification designated as MIL-P-3420, entitled "Packaging materials, volatile corrosion inhibitor treated," has been written and establishes three general grades: light, medium, and heavy-duty. 1 illustration. E.S.

PAPER SALES. Waterproof barrier materials. Paper Sales 12, no. 6: 14-15, 34 (June, 1952); *cf.* B.I.P.C. 22: 761.

The performance requirements of flexible waterproof barrier papers as set forth in JAN-P-125 or Federal specification UU-P-271b are outlined. 1 illustration. E.S.

ZANZIG, NORM. From A to Y. Packaging Parade 20, no. 234: 57 (July, 1952).

The end-use applications of all the trademarked papers produced for the industrial field by the Thilmany Pulp & Paper Company are listed alphabetically. 1 table and 8 illustrations. L.C.

PHYSICAL TESTING—PAPER—EXPANSION AND CONTRACTION

KILPPER, WILHELM. Shrinkage and expansion of the paper web in the paper machine. Das Papier 6, no. 11/12: 216-20; no. 13/14: 290-3 (June, July, 1952). [In German]

The author attempted to establish the relationship between the shrinkage of the paper web during the manufacturing process and the dimensional variations of the finished paper sheet; reference is also made to those factors

which promote or diminish the "activity" of a paper. Data on the shrinkage of the web between the wet presses and the drier part were collected from approximately 80 papers manufactured on three different paper machines from rag, mechanical, and chemical wood pulps, and mixtures of these. The author arrives at the following conclusions: A distinct relationship exists between the web shrinkage in the cross-machine direction (I) and the wet expansion in the same direction (II); both are lowest in rag papers, higher in those containing mechanical pulp, and highest in those made exclusively from chemical wood pulps. The relationship between (I) and the wet expansion in the machine direction (III) is less distinct. (II) is approximately 7 to 10 times greater than (III), because the paper web is prestretched in the machine direction. A study of the pertinent factors of paper-machine operation showed distinctly that the type of pulp and degree of beating exert a far greater influence upon the shrinkage than the manipulations of the paper machine. The values for (II) and (III) are generally much higher on the edges of the web than in its center. With tight paper draws, (III) may be converted into a shrinkage in the machine direction (IV). The dry (IV) is nearly always more than compensated for by the existing tensile stress. (I) and (II) increase with increasing beating degrees, and still more with advanced shortening of the fibers. Slack paper draws, tight drier felts, and wet presses, and a low moisture content of the web at the entrance into the drier section of the paper machine reduce the tendency for (I) and (II). Tight paper draws, on the other hand, decrease (III) and increase (I) and (II). The addition of carboxymethylcellulose to the beater reduces both shrinkage and expansion tendencies. In agreement with Arlov and Ivarsson (*cf.* B.I.P.C. *22*: 345-6), the greatest increase in (I) was found to occur in the range between 60-90% dry content; up to 60% dry content (III) increases, to revert into a slight (IV) on further drying. 4 tables, 12 figures, and 6 references. E.S.

RANCE, H. F. The influence of paper making variables upon sheet characteristics. Proc. Tech. Sect., Brit. Paper and Board Makers' Assoc. 33, no. 1: 173-95; discussion: 196-9 (February, 1952).

The sheet characteristics dealt with are principally strength and structural properties, with a strong emphasis on the anisotropy of the web and its hygroscopic properties. The operational variables discussed include slice operation, shake, stretching of the wet web, press operation, dry web tension, and felt tension. The paper is partly a review of published literature and partly a record of some new experimental results. The factors which cause gross fiber orientation are discussed, together with speculation and some experimental evidence as to the effect of such orientation upon the anisotropies of paper. It is suggested that stretching at the wet end has only a small effect upon sheet anisotropy, but fibril orientation resulting from water removal at the presses may be a more significant factor. The established effect of tension upon the various anisotropies during drying is strongly emphasized, and the practical significance of dried-in strains and frozen-in stresses is discussed. The relationship between mechanical and hygroscopic characteristics is drawn, and new experimental results are presented to indicate the determinant effect of wet-web shrinkage upon subsequent wet expansibility of the paper. In addition, the determinant effect of shrinkage inhibition upon dimensional change after a wetting-drying cycle is pointed out. Experimental results also show how dry stretching of paper increases the shrinkage caused by a wetting-drying cycle, although it decreases the water expansibility of paper. Within the field of variability of machine factors, low wet expansibility is necessarily associated with a high degree

of shrinkage on wetting plus drying and vice versa. New results are presented for the development of shrinkage tension during the drying of sheets made from pulp beaten to different degrees and the value of autographic instruments in this field is re-emphasized. Attention is drawn to the inadequate level of knowledge in the entire field of the interaction of mechanical and hygroscopic factors in papermaking and paper properties. 5 figures and 25 references. E.S.

PHYSICAL TESTING—PAPER—MOISTURE

VAN DEN AKKER, J. A., and HARDACKER, K. W. Instrumentation studies. LXXII. Methods of measuring the moisture content of paper. II. The Fielden Drimeter. Tappi 35, no. 7: 138-48A (July, 1952); *cf.* B.I.P.C. 22: 846.

The Fielden Drimeter is an electrical instrument designed to indicate the moisture content of a moving web of fabric or paper through the partial dependence of the dielectric constant of the combination of fiber and water on the moisture content. Based on an old method, the Fielden Drimeter employs the principle in the form of a parallel-plate electrical capacitance through which the web passes; the capacitance forms one arm of an alternating-current capacitance, the off-balance signal of which is amplified and indicated on a meter. The general method is described in some detail, and a critical theoretical discussion is given of the application of the method to the indication and control of the moisture content of paper (I). Although the principle might be satisfactory in certain instrumental embodiments of the method, it was found that the mechanical and electrical instability of the Drimeter render the instrument unsatisfactory for (I). 8 tables, 7 figures, and 10 references. L.C.

PHYSICAL TESTING—PAPER—POROSITY

SERGEANT, S. V., and BENNETT, W. E. Air permeability tests. World's Paper Trade Rev. 137, no. 18: 1328; no. 21: 1548 (May 1, 22, 1952).

The first of the two authors presents data from which he develops a conversion constant of 8500 for transforming Gurley to Potts air-permeability values. The second author, in elaborating on the first tests, arrives at a slightly higher conversion factor of 8700. 2 tables. E.S.

PHYSICAL TESTING—PAPER—TENSILE STRENGTH

BROUGHTON, GEOFFREY. Behavior of paper under stress. Paper Ind. 34, no. 4: 482-5 (July, 1952).

The author outlines the weaknesses of the ordinary pendulum tester, describes in detail the Instron tensile tester (I), and discusses its applications, using as examples various papers and handsheets. A series of stress-strain curves are given. (I) was found useful in studying the behavior of paper yarn, the loads required to prevent shrinkage in the drying of a paper sheet, and in a study of adhesives in corrugated board. 19 figures and 7 references. L.E.W.

PHYSICAL TESTING—WAX

ANDERSON, A. P. TAPPI-ASTM Technical Committee on Petroleum Wax. Tappi 35, no. 7: 108-11A (July, 1952).

Brief reports of the chairmen of the different sections of the committee

are given as follows: Padgett, J. W. Strength tests, p. 108-9A; Schindler, H. Flow tests, p. 109A; Hinds, G. P. Oxidation stability, p. 109A; Fronmuller, G. D. Sensory tests, p. 109-10A; Rather, J. C. Composition, p. 110A; Kane, M. W., and Smith, A. C., Jr. Blocking, p. 110A; Borden, George C., Jr., and Kirk, J. H. Sealing and laminating, p. 110-11A; and Mueller, George P. Scuff and gloss, p. 111A. E.S.

PLASTIC FILMS—TESTING

SOCIETY OF PLASTICS INDUSTRY, INC. Proposed standards for general purpose vinyl film. Am. Paper Converter 26, no. 6: 14-15, 30; no. 7: 18-19, 64-5 (June, July, 1952).

Commercial standards for general-purpose vinyl films, including requirements and testing methods, are presented. They cover nonrigid, unsupported vinyl films, 10 mils and less in thickness, in transparent, translucent, or opaque form; films for industrial and special applications are excluded. 4 figures. E.S.

PLASTICS

SWEENEY, O. R., ARNOLD, L. K., and LONG, J. T. Cast plastics from 2-furaldehyde. Ind. Eng. Chem. 44, no. 7: 1582-6 (July, 1952).

Because of the depletion of the national resources of petroleum and coal, attention is being given to the utilization of chemicals, such as 2-furaldehyde, which are available from annually recurring agricultural by-products. With the current wide utilization of plastic products, the production of low-cost cast plastics from 2-furaldehyde seems desirable. Previous cast plastics, made at the Iowa State Engineering Experiment Station by treating 2-furaldehyde with ammonia and condensing it with hydrochloric acid, although excellent, exhibited high residual acidity and excessive shrinkage. The residual acidity has been eliminated by the use of other condensing agents, and shrinkage has been reduced by the addition of lignin which is cheap and abundant. Lignin is soluble in 2-furaldehyde to the extent of about 33%, but prolonged stirring is necessary to effect solution. When the mixture was heated to increase the rate of solution, it hardened prematurely. As the amount of lignin is increased, flexural strength increases and shrinkage decreases. Cracking was eliminated with 10 to 15% lignin, but reappeared when greater amounts were used. It was found that by combining lignin with one of the other additives, a product was obtained which was superior to that obtainable from any additive alone, particularly from the standpoint of shrinkage. It has been found that among suitable additives are secondary aromatic amines; certain furan derivatives, such as furfurin, methylfuran, furfural acetone, 2,5-dimethylfuran, furfural acetophenone, furyl acrolein, furfuryl alcohol, and furfuryl acetate, as well as lignosufonic acid mixed with other additives. The plastic sirup, which can be made at a low cost from 2-furaldehyde produced from annually replenished raw materials can be formed by casting in simple inexpensive molds to form a hard, black, strong, shiny, infusible product suitable for many uses. 12 tables, 2 figures, and 21 references. L.C.

PLYWOOD

ANON. Better plywood surfaces. Modern Plastics 29, no. 11: 82-3 (July,1952).

Plastic-surfaced plywood is produced in several grades; the base is

selected fir veneers which are covered with waterproof phenolic adhesive. The surface itself consists of layers of phenolic-impregnated papers (48-52% resin by weight) or a mixture of resin and wood fiber. The plastic overlay may either be opaque or translucent. The method of production and applications are outlined; the latter include re-usable concrete forms, exterior siding for buildings, interior cabinets and furniture, freezer lockers and store fixtures, table tops and other work surfaces, wainscoting, highway signs, displays, boats, antislip flooring, and foundry matchboards. 6 illustrations. E.S.

PRINTING AND PRINTER'S INK

DAY, FREDERICK T. Printing with high gloss inks. Paper & Print 25, no. 2: 208 (Summer, 1952).

Mention is made of advances in high-gloss inks which do not sink into the paper so that the previously required overprint varnish is no longer needed. Paper is an important factor, and hard-sized papers with closed surfaces will give the best results; the use of an offset-spray gun is essential. Brief directions are given with regard to suitable make-ready, pressroom temperatures, the omission of dope, and speedy work, when two or more colors are used. E.S.

LUSIGNEA, WILLIAM. Printer's guide on gummed paper. Am. Printer 133, no. 6: 32, 70-1 (June, 1952).

Useful directions for the printing of gummed label papers are given; the importance of the correct adhesive for different surfaces to which the label is expected to stick and of grain direction is emphasized. Printing on the gummed side of the paper is also considered briefly. 2 tables and 1 figure. E.S.

NASHUA CORPORATION, *Nashua, N.H.* Heat seal papers. Am. Pressman 62, no. 8: 58, 60, 62, 64 (July, 1952).

The company has recently issued a technical manual on heat-seal papers (base stocks with thermoplastic coatings which are normally solid and non-tacky and rendered tacky by the application of heat). Two sections are reprinted which deal with printing, processing, storage, and packaging of heat-seal papers, including useful directions and advice for the avoidance of pitfalls. 1 table. E.S.

ONDECK, JOHN, *and others.* Running gloss inks. Am. Pressman 62, no. 7: 58, 60, 62, 64 (June, 1952).

Practical suggestions are given for the successful application of gloss inks, with reference to inks, paper, printing conditions proper, and stacking, winding, and jogging. Without exception, paper is stressed as one of the most important factors. It should be suitable for this type of work; have an affinity for the ink; not allow the varnishes to soak into the sheet so that the ink will dry flat; have no tendency to curl; and be sufficiently strong so that it will not tear at the grippers. E.S.

PANTIN, JOHN. Gloss printing inks. Am. Pressman 62, no. 8: 18, 20 (July, 1952).

An inkmaker discusses the problems of printing with gloss inks, including the formulation of the ink, certain printing troubles, paper, and press con-

ditions. Some papers are made especially for this type of work, because picking is one of the principal troubles encountered. A paper with a definite grain formation will pick more when printed against the grain. Wherever possible, the paper should be run with the grain at right angles to the gripper. Kromekote is a very good example of a paper well suited for gloss-ink printing, provided it is printed with the grain at right angles to the cylinder. E.S.

STOUT, H. BETTYE. What's new in printing inks. Am. Printer 133, no. 6: 33, 84 (June, 1952).

The author discusses recent discoveries, including polyvinyl chloride inks, fluorescent (Day-Glo) inks, developments in aniline inks, Hydry steam-set inks, faster-setting offset inks, and perfumed inks. E.S.

PUNCHED CARD SYSTEM

RABBY, J. GLENN. This container plant punched its way out of "bookkeeping bag." Am. Boxmaker 41, no. 7: 15-16 (July, 1952).

The author describes the installation of a punched-card system at the shipping container plant of the National Container Corp. at Jacksonville for speeding up the accounting operations with fewer personnel. 3 illustrations. E.S.

RADIOACTIVITY

ANON. Isotopes in industry. Can. Chem. Processing 36, no. 7: 60-1 (June 20, 1952).

In a brief review of industrial applications of radioactive isotopes, reference is made to the installation of a betameter on the wet end of the Fourdrinier machine of the Don Valley Paper Mill, Toronto, for basis-weight control. The meter is connected with the gate valve which regulates the flow of materials onto the paper machine. E.S.

RAW MATERIALS

ARONOVSKY, S. I. The American paper industry needs straw and bagasse. Paper Mill News 75, no. 26: 120-2, 124, 126, 128, 130-1, 150 (June 28, 1952); Paper Trade J. 134, no. 26: 68, 70, 72, 74, 76, 78, 80, 82 (June 27, 1952).

The availability of agricultural residues as raw materials for the pulp and paper industry is discussed, and the suitability of these materials is pointed out. Wheat straw and sugar cane bagasse are the most desirable at present from the over-all standpoint of quantity, availability, procurement, and quality of pulp produced. The pulping characteristics and resulting pulp properties from these two materials are described. Newer pulping methods produce high yields of excellent, strong paper pulps which, when blended with wood pulps, produce specialty papers with better properties than can be produced from either type of pulp alone. Straw and bagasse should not be considered as emergency substitutes but as supplementary raw materials for the American paper and pulp industry. 4 tables and 5 figures. E.S.

BURNS, I. G., and GRANT, J. Potentialities of straw and esparto. World's Paper Trade Rev. 137, no. 25: 1831-4, 1839-40 (June 19, 1952).

The purpose of the article is to emphasize the divergence in the functions of straw and esparto which have become associated in Great Britain since wartime, because the only paper mills which had the necessary installations for processing straw were those which previously handled esparto. This created the impression on the users of paper and the public in general that straw was a substitute for esparto. Esparto is essentially a specialty fiber, and it has established itself as an excellent raw material for printing papers. The supply position is fairly clear-cut; although it will probably continue to occupy the same position in British papermaking as it always has, it cannot be counted on to improve markedly the country's deficit in cellulose. The position of straw in Great Britain is much more debatable. The authors review the unfavorable manufacturing conditions with straw pulp during wartime (low yield, poor recovery of chemicals, and high wetness and slow running on the machines); the papers judged by wartime standards gave rise to no complaint, but the standards were far below those of either wood-pulp or esparto papers. These disadvantages and extravagances could be tolerated during an emergency when no other alternative was available. With the return of wood pulp to the papermaking scene, thought was given to better methods of processing straw than the straight soda cook used for esparto. Several of the more promising newer developments are reviewed, including their advantages and disadvantages (the continuous process involving light digestion with alkali followed by treatment with gaseous chlorine; neutral sodium sulfite and kraft liquors; and a semichemical procedure). The other vital consideration in the use of straw is the availability of the raw material in Great Britain. Various opinions, each carrying a certain measure of authority, differ widely. The whole problem can probably be condensed into the simple statement that the farmer will sell his straw to the papermaker if he receives a worthwhile remuneration. Reference is also made to the increased use of combine harvesters in British farming and the ensuing problems for the user of the straw. In spite of all these difficulties (which are not unsurmountable), the authors conclude that straw will probably play an important role in bridging the cellulose gap in certain parts of the world. 2 tables. E.S.

HEBBS, L. G. S. An approach to the problem of increasing cellulose supplies. World's Paper Trade Rev. 137, no. 21: 1525-30, 1535-9 (May 22, 1952).

In the author's opinion, the recurring shortage conditions in world cellulose supplies follow from the demand temporarily outstripping the rate of expansion in pulping capacity and are not due to lack of fibrous raw materials. Considerable quantities of wood in one form or another are still available in various parts of the world. Competitive price considerations make it probable that the greater part of the increasing requirements of the world will be provided from wood sources, particularly that portion known as market pulp. The author also deals with straw, bagasse, bamboo, papyrus, rice straw, elephant grass, and other fibers of local interest. The conclusion is reached that the contribution which such fibers can make is probably quite small and insufficient to provide the large tonnage required to satisfy the expanding world demand, although they may have value for certain local and specialized uses, particularly in integrated mills. 8 tables. E.S.

HUTCHINSON, HERBERT. Supplies of fibre for paper and board making. World's Paper Trade Rev. 137, no. 17: 1231-2, 1234, 1236 (April 24, 1952).

In the introductory paper of the 63d general conference of the Technical

Section of the British Paper and Board Makers' Association devoted to a discussion of fibrous materials for papermaking, the author outlines the problems facing the industry the world over, based on statistical data released in previous publications. The different sources of wood pulp and the possibilities of other fibers are mentioned. The opinion is expressed that the materials used by the industry need not run out in a shrinking world. 2 tables and 3 references. E.S.

MYERS, WALKER J. Europe's wood problems. Pulp & Paper 26, no. 7: 41 (July 1, 1952).

The author reviews the European wood sources before the second world war and the present possibilities for conserving the existing resources and adding to the supply of fibers for papermaking. E.S.

RAYON—VISCOSE PROCESS

HEKKER, TH. Method to observe impurities in viscose. Svensk Papperstidn. 55, no. 11: 395-6 (June 15, 1952). [In English]

With reference to the Fibroscope mentioned in an article by Vosters (*cf.* B.I.P.C. 21: 420) for observing and counting the number and kind of undissolved particles (gels) in viscose, the author describes a similar instrument which was developed independently for the same purpose in Holland. Data obtained with the apparatus indicate that the clogging constant is correlated with the number of gels present, although inorganic impurities also exert an unfavorable influence. 2 tables, 3 figures, and 6 references. E.S.

RESEARCH

SAMAL, E., and LIEBERT, E. Development research in the paper industry. Wochbl. Papierfabr. 80, no. 11: 382-6, 388 (June 15, 1952). [In German]

An invention today is hardly ever the work of an individual but usually the result of a co-operative effort. The most favorable conditions for development-research activities are outlined; since small- and medium-sized plants generally cannot afford their own research laboratories, co-operative research centers have frequently been established, the cost of operation and maintenance being shared proportionally by the different supporting mills. Suitable localities, staffs, and the selection of problems are discussed, with particular reference to development research in paper-machinery construction and the special problems which it involves. In conclusion, the economics of development research are considered. 4 references. E.S.

RESEARCH LABORATORIES

F. L. Centrallaboratorium A/B—the activities of 35 years. Norsk Skogind. 6, no. 6: 180-3 (June, 1952). [In Norwegian] *cf.* B.I.P.C. 22: 433.

The present articles gives a more detailed description of the laboratory's history during the 35 years of its existence than the previous references. 3 illustrations. E.S.

ROOFING FELTS—TESTING

SCHRÖTER, G.-A., and SCHWERDT, H. Testing and evaluation of slag wool in the roofing-felt industry. Wochbl. Papierfabr. 80,

no. 11: 372, 374, 376, 378, 380, 382 (June 15, 1952). [In German]

A simple method for determining the percentage of fused beads (I) present in slag wool fibers (II) is described. The mixture is beaten mechanically under carefully standardized conditions, and the components are separated by the formation of a suspension of (II), which is decanted from (I). After a series of such mechanical agitations and decantations, (I) are filtered, dried, and weighed. The best conditions for this separation and a full description of the apparatus used are given. Experiments showing the effects of sample size, time, speed, and temperature of agitation, reproducibility of the analysis, and the relationship between (I) obtained by suspension of (II) or by screening are described. 7 tables, 13 figures, and 6 references. L.E.W.

SAFETY

BOWEN, PHILLIP J. The key to the safety program—the foreman. Paper Mill News 75, no. 26: 148, 150 (June 28, 1952); Paper Trade J. 134, no. 26: 55-6 (June 27, 1952).

The author emphasizes that the superintendents, tour bosses, and foremen are responsible for the successful operation of a safety program; a number of specific suggestions for their personal responsibilities in the over-all program are given. E.S.

FOLEY, M. J. Management and safety; a responsibility for every type of executive. Pulp & Paper 26, no. 8: 56 (July, 1952).

The author discusses the high cost of accidents, including not only the actual cost of compensation, but also the hidden costs of loss of efficiency. E.S.

WHEELAND, HOYT H. Operation safety. Pulp Paper Mag. Can. 53, no. 7: 196, 203, 205 (June, 1952).

Because unsafe practices rather than unsafe conditions cause the majority of industrial accidents, a positive attitude toward safety must be cultivated. Examples of such measures taken in the No. 2 Mill of the Mead Corporation are given. L.C.

SALESMEN AND SALESMANSHIP

WHEELWRIGHT, WILLIAM BOND. Learning the paper business from the salesman's angle. Paper Trade J. 135, no. 4: 18 (July 25, 1952).

The author stresses the need for helping the beginner to learn the paper business, particularly those who will become salesmen. Big companies can afford training programs on a large scale, whereas it would not be practical for those who have few replacements to make. Suggestions for proper instruction under such conditions, coupled with visits to paper mills and printing and converting plants, are given. E.S.

SEMI-CHEMICAL PULPING PROCESS

BOUCHAYER, H. Semichemical pulps of high brightness. Ann. Inst. Polytechnique Grenoble, numéro spécial: 155-64 (1952). [In French]

In a series of chemical pulping experiments with beech, birch, and poplar, alone or in admixture, with and without bark, it was found that the highest brightness (somewhat over 50) was obtained with peeled poplar using a three-hour sodium sulfite cook without sodium bicarbonate, at 150°C., and at pH 6.7 to 7.1. The yields were 77-79%. A somewhat higher brightness (58) was reached with poplar cooked with 18% sodium sulfite at 165° for four hours with a 69% yield. The author gives the tabulated results of 53 cooks, and discusses the effects of differences in wood species, concentration of chemicals, temperatures, cooking time, final pH, etc. on the brightness of the resulting pulps. Initial evacuation frequently helped to increase brightness. In a few instances, a brightness of 50 was achieved with species other than poplar. Almost invariably the presence of bark lowered brightness, which was not improved by the addition of wetting agents. 4 tables and 8 references. L.E.W.

SHIPPING CONTAINERS

ANACONDA WIRE & CABLE COMPANY. Armored shipper. Modern Packaging 25, no. 11: 104-6 (July, 1952).

Old-style bulky wood boxes failed to give adequate protection to delicate magnet wire which is easily damaged by shipping and storage handling. The company designed a two-layer molded carton which is superior to wood crates in strength and size, can be used by the customer to return empty spools, and can be nested for storage in the producer's plant. Two two-compartment half-shells, fitted together as tray and cover, have an outer shell of specially washed kraft manila bond, and strengthening fibers of sisal which are partially impregnated with a high-solids, phenolic-resin solution to supply impact-resisting qualities. The inner liner, formulated of southern kraft and specially washed kraft, is slightly thinner and is coated with a vinyl-base resin finish to supply shock-absorbing qualities. The layers are stapled together to make salvaging of one possible if the other is damaged. This container could be easily adapted to the needs of others who ship heavy, precision-surfaced machine parts, etc. 4 illustrations. L.C.

SLIME PREVENTION

BARNOUD, F. Recent views on the slime problem and organic deposits in pulp and paper mills. Ann. Inst. Polytechnique Grenoble, numéro spécial: 139-54 (1952). [In French]

This is largely a resume of the work of American and Scandinavian investigators. 29 references. L.E.W.

BEALS, CHESTER T. Practical slime control. Pulp & Paper 26, no. 8: 40 (July, 1952).

The author outlines the experiences and methods in the specialty (groundwood, sulfite, kraft, and paper) mill at Camas of Crown Zellerbach for combating slime troubles through raising the stock temperature, proper equipment design, periodic machine washups, and the use of nine different slimicides (mercurials, chlorinated phenols, nontoxic organics, and chlorine). E.S.

SPONGES, ARTIFICIAL

ABBOTT, JOHN A. How low-density solids are made. Chem. Eng. 59, no. 7: 212-15, 401-2, 404 (July, 1952).

A review of the different methods of manufacture of foamed and cellular products from rubber, plastics, glass, regenerated cellulose, and concrete is presented; methods for making cellulose sponges are included. 1 table, 5 figures, and 4 references. E.S.

STARCH

FETZER, W. R. Methods in the starch and dextrose industry. Anal. Chem. 24, no. 7: 1129-37 (July, 1952).

This paper is confined to a review of methods applied to finished products that reach the consumer—namely starch, corn sirup, and dextrose. Baumé-dry substance-dextrose equivalent tables have been published with corresponding data for refractive index. New methods have been suggested for the measurement of color in corn sirup. Viscosity tables for corn sirup have been found useful in the design and installation of equipment. The determination of reducing sugars has been improved through the Lane-Eynon procedures employing methylene blue. A special copper method for the determination of dextrose in the presence of other reducing sugars has had wide acceptance. Dry substance-refractive index tables for dextrose and Baumé-dry substance tables have been published. Starch has been shown to be stable over a wide range of drying temperatures. Orifice viscometers for the determination of the fluidity of starch pastes have been greatly improved. New recording viscometers have been suggested for the determination of the rheological properties of starch pastes through a cooking and cooling cycle. 3 tables, 22 figures, and 60 references. E.S.

PASCHALL, EUGENE F., and FOSTER, JOSEPH F. An investigation by light scattering of the state of aggregation of amylose in aqueous solutions. J. Polymer Sci. 9, no. 1: 73-84 (July, 1952). [French and German summaries]

Aqueous alkali has been assumed to be a good solvent for amylose, and has been used as a medium for physicochemical studies on this polymer. It is shown that there is a slow but substantial reduction in the turbidity of normal potassium hydroxide solutions of amylose, even in the almost total absence of oxygen; more significantly, there is a corresponding, but much more rapid, drop in turbidity in neutral solutions (pH 6.5-7.0). At pH 4.0 the turbidities are generally constant up to at least 30 days. The results are interpreted on the basis of aggregates, which evidently must be of a very special type and are termed "native" aggregates; these may consist of amylose in an essentially helical configuration with properties in strong contrast to those of the retrograded aggregates. In the native aggregate the amylose will not retrograde at room temperature without first undergoing a drop in turbidity, which suggests that the transition from the native to the retrograded aggregate passes through the molecular state. Pretreatment with iodine stabilizes the native aggregates toward both disaggregation and retrogradation, the former of which is accompanied by a drop in relative viscosity. Some of the implications of these unexpected observations are pointed out. 9 figures and 9 references. L.C.

PASCHALL, EUGENE F., and FOSTER, JOSEPH F. Further studies by light scattering of amylose aggregates. Particle weights under various conditions. J. Polymer Sci. 9, no. 1: 85-92 (July, 1952). [French and German summaries]

Decreases in particle weight of amylose aged in neutral and alkaline aqueous solution are demonstrated by measurements of turbidity as a func-

tion of concentration. This further verifies that the previously reported turbidity drops are a consequence of the disaggregation of an unusual type of aggregate. The same particle weights are obtained, in the case of aggregated samples, at pH 4 and in normal potassium hydroxide. Anomalies arise in dilution series carried out in neutral solution and in solutions at pH 4 in the case of amyloses of a low degree of aggregation; a probable explanation is given. Samples can be partially stabilized in a given state of disaggregation by rendering the solution alkaline, and normal dilution series curves result. Disaggregation of the "native" aggregates continues with retrogradation, and the retrograded aggregates are broken down readily by alkali. This leads to a method of disaggregation based on retrogradation followed by solution in 0.5 *N* potassium hydroxide. 5 figures and 4 references. E.S.

STATIC ELECTRICITY IN PAPER

BALDWIN INSTRUMENT COMPANY, LTD., *Dartford, Kent.* Static charge tester. World's Paper Trade Rev. 137, no. 22: 1620 (May 29, 1952).

The Baldwin-Dunlop Statigun, a portable instrument for measuring electrostatic charges in general laboratory and workshop use is described. Some mills making the base paper for photographic coatings use the instrument for checking electrostatic charges which cause dirt to collect. 1 illustration. E.S.

MORRISON, J. A. S. Static electricity, the printer's gremlin. Brit. Printer 65, no. 385: 53-5 (July-August, 1952).

The author explains in simple terms how static electricity in printing is created, why it persists, the conditions necessary for its natural discharge, and the methods for discharging it scientifically. E.S.

SÈVE, R. Electrical conductivity of paper. The phenomena of electrization by friction. Ann. Inst. Polytechnique Grenoble, numéro spécial: 67-83 (1952). [In French]

Brief summaries of the two sections are given which constitute the author's 130-page thesis (*cf.* B.I.P.C. 22: 390). 5 figures and 15 references in the first, and 1 table and 20 references in the second section. E.S.

STATISTICAL METHODS

ARLOV, A. P. Sampling on the paper machine in paper-mill research. Norsk Skogind. 6, no. 6: 164-5, 167-71, 173-4 (June, 1952). [In Norwegian; English summary]

The sources of the variations in the properties of machine-made paper are discussed. Definitions are given for the terms: microheterogeneity, anisotropy, variations across the web, variations during one day along the web, and trends, as used in the present study. During several months samples were taken on a Fourdrinier machine making kraft paper for bags. The elongation at rupture (I) of the paper was subjected to an analysis of variance. The variations across the web in (I) in the cross-machine direction were found to be statistically significant, and a distribution curve of the familiar form was obtained. For (I) in the machine direction random variations were found across the web. In most cases where a statistically significant variation was found along the web during one day, the cause of the variation could be traced to changes in the conditions on the paper machine. By examining the total sampling material, a correlation was

found to exist between (I) and rupture strength in the cross-machine direction, with a value for the coefficient of correlation $r=0.80$. It is assumed that the magnitude of r indicates the uniformity of the running conditions on the paper machine, whereas the variation along the lines of regression is caused by changes in the properties of the pulp. 3 tables and 19 figures. E.S.

STEAM POWER

WILLIAMS, A. E. Checking steam usage. World's Paper Trade Rev. 137, no. 26: 1914, 1916, 1921 (June 26, 1952).

The author describes the construction, operation, and limitations of the Spirax steam meter for recording the amount to be charged against the various steam-consuming units in a plant. 2 figures. E.S.

STRAW

ATCHISON, JOSEPH E. Straw pulp developments in The Netherlands. Pulp Paper Mag. Can. 53, no. 7: 97-100, 105 (June, 1952); Paper Trade J. 135, no. 3: 39-40, 42, 44-5 (July 18, 1952).

Straw is used more extensively in the pulp and paper industry in The Netherlands than in any other country of the world at the present time. The author describes the experiment station for the utilization of straw, the strawboard industry, developments in the production of straw pulp, cooking processes used, a co-operative project for the study of straw pulping, the size of straw pulp mills, and several individual mills. L.C.

CHÊNE, M., and DEISSENBERG, CH. Studies on the preparation of chemical pulps from straw. Ann. Inst. Polytechnique Grenoble, numéro spécial: 41-4 (1952). [In French]

A series of laboratory cooks was made with the following reagents: lime, lime and sodium hydroxide, lime and sodium carbonate, lime and sulfur, calcium sulfide, caustic soda, sodium sulfide, sodium carbonate, caustic soda and sulfur, neutral sodium sulfite and caustic soda, sodium sulfite and sodium carbonate, calcium sulfite and sodium carbonate, and cold 41.5% nitric acid. However, only data obtained with lime cooks are recorded, and the yields and some of the properties of the resulting pulps are shown graphically. 1 table and 3 figures. L.E.W.

NELSON, G. H., TALLEY, L. E., and ARONOVSKY, S. I. Bleaching studies on monosulphite wheat straw pulp. Tappi 35, no. 7: 301-5 (July, 1952).

Wheat straw pulped by the monosulfite process was bleached by single-stage and three-stage procedures. Various factors in the bleaching operation, such as temperature, pH, pulp consistency, chlorine-partition factor, and time of bleaching, were investigated. Optimum conditions for single-stage bleaching were: pulp consistency of 6 to 16%, pH of 7 to 9, and temperature of 30 to 50°C. Optimum conditions for three-stage bleaching were: use of 50 to 70% of chlorine for the first stage at room temperature and pulp consistency of 4 to 8%; use of 1% sodium sulfite and 1% sodium carbonate (basis dry unbleached pulp) at 80° for the alkaline extraction stage; and use of hypochlorite at a consistency of 6 to 16%, pH of 7 to 9, and temperature of 30 to 40° for the third stage. 4 tables, 5 figures, and 3 references. E.S.

STRAW—WASTE LIQUOR

CHÊNE, M., DEISSENBERG, CH., and LION, N. Purification of

waste liquors obtained in the manufacture of pulps. Ann. Inst. Polytechnique Grenoble, numéro spécial: 45-53 (1952). [In French]

The authors describe the principal pollution effects produced by waste liquors, especially those resulting from straw cooks. Autopurification is discussed briefly, and preliminary results in chemical purification obtained at Grenoble are outlined. Liquors resulting from lime straw cooks were treated with an excess of carbon dioxide and then neutralized with lime (pH 7.5). Although putrefaction was not prevented in the treated liquor, the B.O.D. was reduced considerably and the reducing power was also lowered. With liquors resulting from sodium hydroxide straw cooks, sulfuric acid was added until pH 7.8 was attained, but the decanted liquor (although much lower in organic matter) actually showed a higher B.O.D. than did the original waste liquor. Liquors from neutral sulfite cooks of a hard- and a softwood were treated with ferrous hydroxide formed in the liquor by the addition of ferrous sulfate and lime. Aluminum hydroxide could also be used as a deflocculating agent. In the case of the softwood, the treated waste liquor showed a much lower reducing value and B.O.D. (i.e., after the sulfites had been oxidized with sodium hypochlorite) than did the untreated liquor. It was found expedient to render the liquor slightly acid (pH 6.4) prior to discharge into a stream. 5 tables and 5 references. L.E.W.

STREAM POLLUTION

RUDOLFS, WILLEM, and NEMEROW, N. L. Rag, rope, and jute wastes from specialty paper mills. IV. Anaerobic digestion. Sewage Ind. Wastes 24, no. 7: 882-7 (July, 1952); *cf* B.I.P.C. 22: 859-60.

Anaerobic digestion studies showed that rope, rag, and jute spent liquors, when combined with the wash waters of the first hour, neutralized, and fortified with nitrogen and phosphorus, are digestible at maximum loadings from 0.027 to 0.056 pound B.O.D./cu. ft. of digester capacity per day, effecting from 72 to 82% B.O.D. reductions. Rope waste was the least amenable to this type of treatment; it was no more amenable when digested at 35 than at 20°C., nor when acid hydrolyzed prior to digestion. Sodium sulfite retarded or inhibited the digestion of rope waste. A method was devised for removing the sodium sulfite, and this resulted in somewhat higher digestion loadings. Jute-waste digestion required a detention period of only two days, rag waste four days, and rope waste six days. The digestion treatment may be followed by oxidation when required. 1 table, 3 figures, and 11 references. E.S.

SULFATE MILLS

DYCK, A. W. J. Riegel now in pulp production. Paper Ind. 34, no. 4: 466-71 (July, 1952); *cf*. B.I.P.C. 22: 860.

An illustrated description is given of the new sulfate mill of the Riegel Carolina Corp. at Acme, N.C. 17 illustrations. E.S.

SULFITE MILLS

ANON. Rayonier breaks ground for $25,000,000 plant in Doctortown, Ga. Southern Pulp Paper Manuf. 15, no. 7: 24-6 (July, 1952).

Ground was broken for the new pulp mill of Rayonier at Jesup, near Doctortown, Ga. on June 5, 1952. The plant is expected to be in operation

early in 1954. An improved process recently developed by Rayonier's research and engineering division will be used to produce 250 tons daily of superior grades of dissolving pulp; 550 cords of pulpwood per day will be used and come from company-owned timberlands and local purchases. 1 map and 5 illustrations. E.S.

SULFITE WASTE LIQUOR

ANON. Development of Lignosol and its uses. Paper Trade J. 135, no. 2: 14, 16, 18 (July 11, 1952); Tappi 35, no. 8: 87-90A (August, 1952); see abstract below.

Essentially the same information is presented as in the following abstract. 1 table and 4 illustrations. E.S.

ANON. Taking the waste out of spent sulphite liquor. Can. Chem. Processing 36, no. 7: 36-8 (June 20, 1952); Pulp Paper Mag. Can. 53, no. 9: 84-5 (August, 1952); *cf.* B.I.P.C. 18: 123; 20: 559.

The development of Lignosol, a product derived from spent sulfite liquor, is outlined. The first pilot plant was built in Chandler, Que., in 1943 and used until 1951; then construction of a new enlarged plant in Quebec City was started and completed in the late spring of 1952. In 1950, Lignosol Chemicals Limited was formed to operate the entire project; the company is financed jointly by the Anglo Newfoundland Development Co. Ltd. and the Anglo Canadian Pulp and Paper Mills Ltd. The different Lignosol products developed to date are listed; they include road, foundry-core, and refractory binders; adhesives; dispersing, tanning, dye-leveling, and soil-stabilizing agents; additives in electrolytic copper refining; and others. 3 illustrations. E.S.

SULFUR

ANON. Sulphur from petroleum. Ind. Chemist 28, no. 329: 271-2 (June, 1952).

The gaseous fraction from the new catalytic cracker at the Shell refinery at Stanlow, England contains appreciable quantities of sulfur. A plant has now been installed to strip the gas stream containing the hydrogen sulfide (I) from the other gases with diethanolamine (II), heating the resulting solution to separate (II) from (I), and burning (I) with a controlled, limited amount of air so that pure sulfur results from the combustion. About 10,000 tons per year are recovered. 4 illustrations. E.S.

WILLIAMS, LANGBORN M. Sulphur shortage virtually ended. Paper Trade J. 135, no. 4: 36-7 (July 25, 1952).

Nearly 100 new projects in the United States and other free-world countries promise an additional four million tons of sulfur per year by the end of 1955, with an increase of 1.5 million tons by the end of this year. Six of the new projects are producing sulfur by the Frasch process, 12 from other native deposits, 16 from sour natural gas, 19 from refinery gases, one from pyrites, and one from smelter gases, whereas 37 will obtain it in various other forms. As 1951 ended, all the sulfur requirements of the essential defense industries of the United States and a high percentage of the domestic needs were being met; stockpiles had not fallen below the minimum for national security, and a large part of the needs of the Allies had also been supplied. 1 table. L.C.

SWELLING AND HYDRATION

CHÊNE, M., and MANTELET, P. Capillary properties of pulps and papers. Ann. Inst. Polytechnique Grenoble, numéro spécial: 55-66 (1952). [In French]

The authors examined five sulfite pulps relatively high in α-cellulose (91.5-95%) and reported the following: time in seconds required for a 10-cm. capillary rise of water on the pulp strip; the corresponding average radius of capillaries in the sheet (in microns); the time required for a 3-cm. rise of 18% sodium hydroxide; swelling noted in *N* sodium hydroxide after 1200 seconds, recorded as the weight of a sheet after steeping divided by the original weight; swelling noted in mercerizing-strength sodium hydroxide at the end of 0.5 hour; the specific surface (sq. cm./g.); the specific volume (cu. cm./g.); and the average fiber length. The techniques for making these determinations and the necessary calculations are described, and the possible correlation is discussed. 8 tables and 5 references. L.E.W.

TALL OIL

ELDRIDGE, J. W., and SELDEN, M. G. Coating ingredients from tall oil. Tappi 35, no. 7: 134-5A (July, 1952).

The possibilities for developing tall oil into products which can compete successfully with the established drying oils, varnishes, and paint vehicles are described. E.S.

JAKOBSON, TORSTEN. Tall oil or liquid rosin; a literature review. Svensk Papperstidn. 55, no. 12: 432-8; no. 13: 460-5; no. 14: 483-9 (June 30, July 15, 31, 1952). [In German] *cf.* B.I.P.C. 21: 48.

Continuing his previous review, references no. 764-1032 are added to the author's bibliography. The majority cover the period 1947-51, although some earlier ones are also included. E.S.

TESTING, GENERAL

MACDONALD, R. G. International standards; international testing procedures. Tappi 35, no. 7: 112-17A (July, 1952).

The report of the chairman of the Subcommittee on Testing and Nomenclature, Wood Chemistry Committee of the F.A.O., as presented at the International Conference at Appleton, Wis. on Sept. 17, 1951 is given. Correspondence with officials of technical associations in Great Britain, the Scandinavian countries, and Australia is quoted, and standard methods approved by the following are listed: Commonwealth Scientific and Industrial Research Organization, Division of Forest Products (Australia); Technical Section of the British Paper and Board Makers' Assoc. (Inc.); Verein der Zellstoff- und Papier-Chemiker und -Ingenieure; Swedish Paper and Pulp Engineers Association; Technical Section, Canadian Pulp & Paper Association; and TAPPI. The report was compiled as part of an effort to adopt international standards through the F.A.O. It was felt, however, that since there are international standardizing agencies in existence, the F.A.O. should limit its activities to being a clearing house wherein the standardizing activities of the separate pulp and paper technical organizations may make known to each other their individual progress in developing testing procedures. L.C.

TESTING, GENERAL—PAPER

CRAIG, F. A. Practical paper making. No. 12. The chemistry of paper making. Paper & Print 25, no. 2: 175-6, 178-9 (Summer, 1952); *cf.* B.I.P.C. 22: 599.

A number of physical paper testing methods are outlined, including absorbency, freeness, basis weight, finish, caliper, bursting strength, tensile strength, tear, porosity, and opacity; reference is also made to the determination of the ash and acidity of paper by chemical methods. 3 illustrations. E.S.

TRADE-UNIONS

PHILLIPS, PAUL L. What labor unions have meant to the paper industry. Paper Mill News 75, no. 26: 138, 140, 146 (June 28, 1952); Paper Trade J. 134, no. 26: 62-4 (June 27, 1952); Southern Pulp Paper Manuf. 15, no. 7: 64, 66, 68 (July, 1952).

The author discusses the advantages which the industry derives from collective bargaining and suggests the inauguration and implementation of a continuous program of training for the supervisory staff in the art of harmonious labor relations; the union is spending many thousands of dollars each year in similar training programs designed to teach officers and shop stewards to do a businesslike job with management. E.S.

TURPENTINE

GOLDBLATT, L. A., and BURGDAHL, A. C. Turpentine from ponderosa pine. Ind. Eng. Chem. 44, no. 7: 1634-6 (July, 1952).

The supply of southern stumpwood, which is the present source of commercial, steam-distilled wood turpentine, is declining. Millions of acres of western ponderosa pine stumps are an untapped potential source for commercial production, and interest in the western pines as a source of naval stores has recently been revived. The composition of the turpentine obtainable by acetone extraction of stumpwood and lumber from ponderosa pine has been determined. The two turpentines are very similar to each other, but are different from all present commercial turpentines. The chief component is Δ^3-carene (70%). Other components include α-pinene (8%), β-pinene (6%), and myrcene (8%). Compounds present in still smaller proportion include camphene, α-terpinene, limonene, terpinolene, *p*-cymene, and benzaldehyde. Inasmuch as Δ^3-carene is completely absent from all commercial American turpentines, ponderosa turpentine cannot be regarded as a simple replacement. The presence of significant amounts of myrcene is noteworthy, as this is the first time myrcene, or in fact any branched-chain acyclic hydrocarbon, has been reported to be present in turpentine from pines. 1 table and 9 references. E.S.

UNITED STATES—GOVERNMENT

ABRAMS, ALLEN. The third generation. Paper Mill News 75, no. 26: 98-9, 110 (June 28, 1952); Paper Trade J. 134, no. 26: 53-5 (June 27, 1952); Southern Pulp Paper Manuf. 15, no. 7: 60, 62, 64 (July, 1952).

The author contrasts the pioneer freedoms of Americans with the abnormal growth of the Federal Government in recent years. E.S.

VANILLIN

PEARL, IRWIN A., and BEYER, DONALD L. Reaction of vanillin and its derived compounds. XV. 3-Ethoxy-4-hydroxybenzoic acid and some of its esters. J. Am. Chem. Soc. 74, no. 12: 3188-90 (June 20, 1952); *cf.* B.I.P.C. 22: 616-17.

Since the margin between effective therapeutic levels and those which produce toxic manifestations in the treatment of disseminated histoplasmosis with ethyl vanillate is only about 25-30%—a margin of safety too small for a desirable therapeutic agent—the effect of changes in the ethyl vanillate molecule on the therapeutic activity of the compound was studied. The present paper deals with the preparation of the related 3-ethoxy-4-hydroxybenzoic acid (I) and representative esters of the compound. The inhibiting concentrations of seven esters of (I) were determined for four representative aerobic micro-organisms, and the results are presented in tabular form. Octyl 3-ethoxy-4-hydroxybenzoate was found to be more toxic toward *Bacillus mycoides* (inhibiting concentration 0.0009) than any ester of vanillic acid studied by the authors to date. 1 table and 12 footnotes. E.S.

VENTILATION

PARTSCH, F. W. Summer ventilation for the paper machine room. Paper Mill News 75, no. 29: 77 (July 19, 1952).

Machine rooms with proper ventilation systems can be made as comfortable as any other part of the mill. A brief reference is made to the three latest developments along this line: the Standpipe, the Dog-House, and the continuous Air-Curtain systems which assist in providing fresh, clean, dry air in sufficient volume, of correct velocity, and in the correct directions to the desired sections of the machine room. E.S.

VISCOSITY

HIGGINBOTHAM, R. S., and BENBOW, J. J. Two viscometers for rapid measurements at definite shearing stresses. J. Sci. Instruments 29, no. 7: 221-4 (July, 1952); *cf.* B.I.P.C. 20: 749.

Two modifications of the cone and plate viscometer are described. The first, for measurements at low shearing stresses (10 to 100 dynes/sq. cm.), employs a phosphor-bronze strip to apply torque to the cone. The second, a direct-reading instrument for measurements at a relatively high stress (4500 dynes/sq. cm.), uses a small d.c. motor running at constant torque to drive the cone. The range of the first instrument is 1 to 100 poises at 10 dynes/sq. cm., and 10 to 1000 poises at 100 dynes/sq. cm., and that of the second is 0.5 to 30 poises. Their accuracy varies according to the viscosity and anomaly of the fluid under examination, but the average is about ±5%, which is quite adequate for many purposes. The examination of a sample with either instrument, including filling and cleaning, can be completed within two minutes. A table giving the results obtained with the two instruments with several gums is included. 1 table, 5 figures, and 2 references. E.S.

WAGES

FINN, LOUIS J., and HEWITT, PAUL J. Bemis Bro. in Peoria try the incentive wage plan. Am. Paper Converter 26, no. 7: 11-14, 46-7 (July, 1952).

The gradual introduction and details of the incentive-wage plan developed

for the Peoria plant of Bemis Bro. Bag Co. are described; the plant combines papermaking with conversion to multiwall bags. Over 600 employees are required in the mill, bag factory, and office. 5 illustrations. E.S.

WASTE HEAT

MARBLE, WILLIAM C. The application of air heaters and economizers in paper mill power plants. Tappi 35, no. 7: 126-30A (July, 1952).

The characteristics of heat-recovery equipment and possible applications in the pulp and paper industry are discussed. 2 tables, 4 figures, and 1 reference. E.S.

WATER-MARKS

HENDRICH, WALTER G. Watermaking. Pulp Paper Mag. Can. 53, no. 7: 108-10 (June, 1952).

The history of watermarking is traced through the hand mold, the marking-roll dandy, felt marking, the rubber mark, metal-roll marking on a drier or molette, and the embossing calender. 1 chart. L.C.

WET STRENGTH

CHÊNE, M., and MARTIN-BORRET, O. Chemical studies applied to the improvement of paper properties. Ann. Inst. Polytechnique Grenoble, numéro spécial: 7-21 (1952). [In French]

Straw pulp (25° S.-R.) was treated with increasing amounts of aluminum sulfate (I) and aluminum chloride (II) in distilled water. Melamine resin (III) (3%) was then added and handsheets were prepared, which after having been conditioned for 48 hours at 20°C. and 65% R.H. were subjected to the Elmendorf tear test (IV) and breaking length (V) determinations. Wet (IV) and (V) were also determined both after conditioning as above and after drying for 24 hours at 100°. Controls were run with sheets from untreated pulp and from pulp treated with (III) alone. When (III) alone was added, both (IV) and (V) increased well over those of the controls. Sheets which had been dried at 100° and then moistened showed markedly greater (IV) and (V) than did those which had been moistened without oven drying, and in some instances (IV) of the wet sheet was practically identical with that of the air-conditioned dry sheet, although (V) of the wet sheet was invariably much lower than that of the corresponding dry sheet. The effect of (I) and (II) plus (III) was negligible on (V) of the wet or dry sheets, but in a few instances improved the (IV) of both the dry and wet sheets. Using a bleached sulfite pulp, aluminum salts in general gave lower wet and dry (V) than did (III) alone and had no very marked effect on the (IV). A study was also made of the effects on (IV), (V), and ash retention (VI) of a bleached sulfite pulp (S.-R. 58°) by using tap water (VII), water softened by a single permutite treatment (VIII) (i.e., replacing Ca^{++} and Mg^{++} by Na^{+}), and water (IX) retaining only 20 mg. of ash/liter in conjunction with (I) and (II) in varying concentrations. (VII) and (VIII) had very similar effects; wet (IV) increased slightly with increasing Al^{+++}, especially with (II), but the dry (IV) decreased. Somewhat similar fluctuations were noted for (V). In all cases (V) increased sharply with increasing (I) or (II) concentration. When, however, (IX) was used in the pulp suspension, the changes in (IV) and (V) were negligible and in (VI) were only gradual with increasing (I) or (II) concentrations. When test sheets were moistened with (VII), little change was noted in water retention or in

(V) after 15 minutes up to 15 hours. Pulp treated with 20% (I) retained considerably less water than did untreated pulp and showed a markedly higher (V). Again effects of steeping over long periods were not very marked. Pulp treated with 10% (I) showed the lowest water retention and the highest (V). The data point to the sizing effects on the test sheet of aluminum salts alone. 1 table, 5 diagrams, and 13 references. L.E.W.

WOOD—SACCHARIFICATION

GILBERT, NATHAN, HOBBS, I. A., and LEVINE, J. D. Hydrolysis of wood using dilute sulfuric acid. Ind. Eng. Chem. 44, no. 7: 1712-20 (July, 1952).

The hydrolysis of mixed hardwood chips to sugars and the concentration of the resultant sugar solutions to molasses for animal feeding were investigated through the operation of a pilot plant which had a capacity of about 1.4 tons of dry-wood substance per batch. The pilot-plant equipment included (a) a wood hog for the chipping of cordwood; (b) a Monel digester in which the wood chips were hydrolyzed with dilute sulfuric acid at high temperature and pressure; (c) neutralizing tanks in which the dilute sugar solutions were neutralized with either lime or limestone and the slurries were settled; (d) a submerged combustion evaporator to concentrate the dilute sugar solution to 25% molasses; and (e) a vacuum evaporator for further concentration of the 25% molasses to a reducing-sugar content of about 45 to 50%. Several departures from the Madison wood-sugar process were tested in the course of pilot-plant operation, and several operating difficulties were identified and resolved. The effect on the time of hydrolysis, on the yield and concentration of reducing sugars, and on the operability of the pilot-plant of the following variations in procedure and process variables were evaluated: temperature and duration of a holding period; use of a recycling procedure; time-temperature schedule and maximum temperature of percolation; rate of percolation; and acid concentration. In a process based on the pilot-plant results, hardwood chips can be converted to molasses with a net yield of 1470 pounds of 50% molasses (125 gallons) per ton of dry-wood substance. An investment and production cost estimate is presented for a plant to use 50 tons of dry-wood substance per day for a Memphis, Tenn. location, and the cost of production of molasses is compared with the market price of blackstrap molasses and of corn. 5 tables, 7 figures, and 20 references. E.S.

WOOD WASTE

WEIMER, JOSEPH GLENN. Cull and waste woods furnish new pulp source. Chemurgic Digest 11, no. 7: 10 (July, 1952); Southern Pulp Paper Manuf. 15, no. 6: 25 (June, 1952).

Based on experiments at the Herty Laboratory, pulps from cull hardwoods added to standard kraft pulp gave an equal or better sheet than kraft alone; bleached pulp from hardwood waste has also been converted successfully into printing and book papers. E.S.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents will be abstracted from the complete specifications.

BARKERS AND BARKING

CARPENTER, ROBERT J. Angularly adjustable feed rolls for log peeling or rossing machines. U. S. patent 2,601,261. Filed Aug. 3, 1950. Issued June 24, 1952. 3 claims [Cl. 144-246]

A rossing machine is so constructed that different sizes of logs may be peeled and moved endwise through the machine at a substantially uniform rate. 17 figures. E.G.S.

DELEAN, ALBERT, SANDRIN, ALBERT, and SANDRIN, ARTHUR. Supporting arms for log barking machine. Canadian patent 483,833. Filed April 19, 1948. Issued June 10, 1952. 4 claims.

A barker includes, in addition to the main frame and cradle, a pair of pivotally mounted arms at each end of the cradle. Parts of the arms of each pair are spaced apart to form seats for receiving a log and are pressed toward each other by coil springs. A member of each pair of arms carries a handle by which the log is worked toward or away from the stripper as required. 7 figures. E.G.S.

HOLVECK, JOSEPH E., and ROCKWOOD, ARTHUR. Apparatus for debarking logs. Canadian patent 484,975. Filed Oct. 30, 1946. Issued July 15, 1952. 36 claims. Assigned to Worthington Pump and Machinery Corporation.

A hydraulic barker is equipped with cleaning nozzles for removing pieces of bark from the apparatus, together with pressure-operated hydraulic bypass valves for controlling the delivery of some of the high-pressure water to the nozzles. 29 figures. E.G.S.

RAMBO, WILLIAM H., and DERICE, HAROLD A. Hydraulic log

barking apparatus. Canadian patent 484,211. Filed Oct. 11, 1951. Issued June 24, 1952. 6 claims.

This is the same as U. S. patent 2,579,613; *cf.* B.I.P.C. 22: 449. E.G.S.

BOARD—COATED

CAMP, THOMAS P. Water-repellent coating composition and method. Canadian patent 482,319. Filed Sept. 20, 1945. Issued April 8, 1952. 3 claims. Assigned to Canadian Gypsum Company Limited.

A coating or impregnating composition for cementitious materials (e.g., gypsum board) comprises paraffin wax and asphalt in an aqueous emulsion. This is the same as U. S. patent 2,464,759; *cf.* B.I.P.C. 19:596. E.G.S.

BOARD, ASBESTOS

BRADSHAW, LEONARD C. Manufacture of bituminized fibrous products. U. S. patent 2,602,029. Filed Sept. 17, 1946. Issued July 1, 1952. 6 claims. Assigned to International Bitumen Emulsions Limited. [Cl. 92-21]

A method of producing a rigid insulating or structural board comprises the steps of forming a sheet from approximately equal parts of asbestos fibers and a binder of fatty acid pitch mixed with sufficient sulfur to accelerate hardening and modified with a hard bitumen, gradually drying the sheet at a temperature below 90°C., and baking the dried sheet at 150-170°. E.G.S.

BOARD, LAMINATED

PLZAK, JAMES J., and HUSOME, CARL E. Metal joint for panels. U. S. patent 2,604,422. Filed Oct. 25, 1946. Issued July 22, 1952. 5 claims. Assigned to Consolidated Water Power & Paper Co. [Cl. 154-45.9]

A laminated paper or wood veneer panel incorporates a thin metal strip between adjacent subpanels which serves as a waterproof corner connector. 3 figures. E.G.S.

RUMBERGER, GEORGE G., and HEALD, ALFRED M. Laminated sheet material. U. S. patent 2,599,130. Filed Sept. 19, 1949. Issued June 3, 1952. 13 claims. Assigned to Marathon Corporation. [Cl. 154-50]

A coated sheet material which is suitable for use in the manufacture of paper milk containers comprises a base sheet (e.g., a 25-lb. sulfite) and a superficial film of wax. The wax film consists of a microcrystalline wax substantially free from normal paraffins. E.G.S.

BOARD SPECIALTIES

DITZLER, GUY E., and KOVNAT, MAURICE B. Surprise display. U. S. patent 2,601,374. Filed Feb. 24, 1947. Issued June 24, 1952. 1 claim. [Cl. 40-126]

A folding cardboard display device which is actuated by rubber bands embodies side portions and an upright front portion which are extended to

provide a three-dimensional structure in its display or erected position. 8 figures. E.G.S.

DRYER, EDWARD L. Venting closure and liner therefor. U. S. patent 2,602,559. Filed Sept. 24, 1948. Issued July 8, 1952. 2 claims. Assigned to Armstrong Cork Company. [Cl. 215-56]

A closure cap for bottles of bleaching solution (e.g., sodium hypochlorite, hydrogen peroxide, and the like) embodies a composite liner which is capable of venting excess pressure developed in the bottles. The liner comprises a laminate of a resilient backing (e.g., cork, pulpboard, news pulp, or the like), an intermediate screen layer (e.g., coarse window screen), and a facing layer (e.g., Vinylite, saran, Pliofilm, metal foil, varnished paper, and the like). 6 figures. E.G.S.

FORRER, HOMER W. Bottle carrier. Canadian patent 484,783. Filed Nov. 23, 1951. Issued July 8, 1952. 11 claims. Assigned to Atlanta Paper Company.

A paperboard bottle carrier is provided with a multi-ply, telescoping carrying handle. This is a reissue of Canadian patent 466,498 (*cf.* B.I.P.C. 20:918) and is the same as U. S. patent 2,537,452 (*cf.* B.I.P.C. 21: 432). 15 figures. E.G.S.

GEORGE, WALTER C. Corner construction for marginally flanged paperboard container covers. U. S. patent 2,603,406. Filed Oct. 14, 1949. Issued July 15, 1952. 7 claims. Assigned to Gaylord Container Corporation. [Cl. 229-44]

The corner construction of a paperboard container is described in which the cover panel has a depending free side marginal flange with a lower marginal flap which is folded upwardly along the inner face of the flange, and a depending end flange that terminates at its outer end in a right-angle tongue which is secured between the depending side flange and the upwardly folded lower marginal flap. 8 figures. E.G.S.

GRAY, HARRY Z. Bottle carrier. U. S. patent 2,604,354. Filed Sept. 11, 1948. Issued July 22, 1952. 9 claims. [Cl. 294-87.2]

A bottle carrier comprises a two-layer flat sheet which is formed with staggered openings in each layer and with bottle-engaging tabs. A hand hole is included. 9 figures. E.G.S.

HOLLINSHEAD, JAMES A. Container end closure. U. S. patent 2,603,400. Filed Oct. 4, 1948. Issued July 15, 1952. 2 claims. Assigned to Consolidated Paper Company. [Cl. 229-5.5]

A hexagonal end closure for a cylindrical fiber drum consists of six symmetrical triangular scored portions. A pair of relatively foldable lobes or sections is located between the remote apexes of the triangles. Upon the collapse of the end-extension triangles toward the closure plane, the intermediate lobes are folded inward to leave the group of triangles as the sole end exposure for the container. 5 figures. E.G.S.

LATHROP, ELBERT C., and NAFFZIGER, THEODORE R. Shock-resistant product. U. S. patent 2,603,156. Filed Aug. 2, 1946. Issued July 15, 1952. 11 claims. Assigned to the United States of America as represented by the Secretary of Agriculture. [Cl. 102-95]

A board product which is highly resistant to delamination or shattering when subjected to explosive shock or continuous vibration is adapted for use in the manufacture of shotgun shell wads. The board is formed from a mixture of water-softened vegetable fibers (e.g., cereal straws or grasses, such as wheat straw) and beaten, chemically hydrated papermaking fibers. E.G.S.

THOMPSON, GLENN S. Consumer type container end structure. U. S. patent 2,603,403. Filed May 22, 1947. Issued July 15, 1952. 10 claims. Assigned to Ira M. Jones. [Cl. 229-5.5; changed to 229-37]

A paper- or fiberboard food container is provided with hollow rims at both ends, which serve to reinforce the body and to form supporting ledges for adhesively applied end closures. 14 figures. E.G.S.

WILLIAMSON, MARSHALL I. Display container. Canadian patent 484,250. Filed Aug. 6, 1947. Issued June 24, 1952. 4 claims.

A collapsible cardboard display container comprises a display-forming section and a bin-completing section which extends integrally from one end of the display section. This is the same as U. S. patent 2,532,216; *cf.* B.I.P.C. 21:282. 8 figures. E.G.S.

BOARD TESTING—PHYSICAL

VAN DEN AKKER, JOHANNES A. Creep testing apparatus. Canadian patent 482,346. Filed March 10, 1950. Issued April 8, 1952. 4 claims. Assigned to The Institute of Paper Chemistry.

An apparatus is designed to measure the permanent deformation or creep of materials (e.g., plastic and paperboard products) under prolonged stress. This is the same as U. S. patent 2,506,048; *cf.* B.I.P.C. 20:755. 4 figures. E.G.S.

CELOTEX

WESNER, WILTON W. Composite sheathing board and method of making the same. Canadian patent 484,634. Filed May 3, 1951. Issued July 8, 1952. 10 claims.

A composite sheathing board consists of a sheet of Celotex or similar material, disposed in the same plane between narrow strips of wood. This is the same as U. S. patent 2,553,227; *cf.* B.I.P.C. 21:747. 6 figures. E.G.S.

CHLORINE

BELCHETZ, ARNOLD. Catalytic production of chlorine. U. S. patent 2,602,021. Filed June 30, 1948. Issued July 1, 1952. 19 claims. Assigned to The M. W. Kellogg Company. [Cl. 23-219]

A process is described for the catalytic oxidation of hydrogen chloride with oxygen to produce chlorine. The particles of catalyst (e.g., cupric chloride) and/or inert carrier (e.g., porous brick) are cyclically circulated in the catalytic conversion zone in order to facilitate temperature control and catalyst regeneration. 3 figures. E.G.S.

COAL

BERL, ERNST. Coking coal. U. S. patent 2,591,496. Filed Aug. 6, 1946. Issued April 1, 1952. 10 claims. [Cl. 202-33]

A coking coal is produced by mixing kraft black liquor directly with noncoking coal, drying the mixture, and coalifiying the dried material in a closed vessel at temperatures up to 370°C. E.G.S.

COLORIMETRY

LOUKOMSKY, SERGE A., and STEARNS, EDWIN I. Tristimulus integrator. U. S. patent 2,603,123. Filed March 4, 1950. Issued July 15, 1952. 5 claims. Assigned to American Cyanamid Company. [Cl. 88-14]

A tristimulus integrator for color measurement incorporates a basic binary system of flip-flop tubes which serves to give preferred weighting in powers of two to certain selected ordinate values of a tristimulus function. 10 figures. E.G.S.

STEARNS, EDWIN I., JR. Color matching apparatus. Canadian patent 484,454. Filed Jan. 10, 1946. Issued July 1, 1952. 10 claims. Assigned to American Cyanamid Company.

A color-matching instrument is designed to provide instantaneous registration of the tristimulus value of a mixture of any concentrations of a number of known dyestuffs. 19 figures. E.G.S.

DIELECTRICS

ATKINSON, RALPH W., and MCGRATH, MARTIN H. Insulated electric power cables. Canadian patent 484,663. Filed June 3, 1948. Issued July 8, 1952. 14 claims. Assigned to Canada Wire & Cable Company, Limited.

An electrical cable comprises a conductor, a wall of oil-impregnated, laminated paper insulation, an electrostatic shielding layer over the paper, and a flow-limiting layer of polyethylene enclosing the insulated, shielded conductor. The polyethylene covering serves to retard the drainage of oil from the cable and the entrance of moisture into the cable prior to installation. The cable is installed in a length of steel pipe, and the pipe is subsequently filled with an insulating fluid. 1 figure. E.G.S.

DISPENSING CONTAINERS

JONES, JOHN P. Dispensing milk container. U. S. patent 2,601,399. Filed May 21, 1945. Issued June 24, 1952. 3 claims. Assigned to Dairy Specialties, Inc. [Cl. 222-482]

A paper milk container is provided with combined cream and milk pouring apertures at different levels in the side of the container, both covered by the same opening flap. 5 figures. E.G.S.

PREIS, CARL G. Container with water shedding top construction. U. S. patent 2,601,945. Filed April 14, 1949. Issued July 1, 1952. 4 claims. Assigned to American Can Company. [Cl. 229-7]

This corresponds to Canadian patent 480,827; *cf.* B.I.P.C. 22:539. E.G.S.

TURNER, GEORGIA B. Bib dispensing carton. U. S. patent 2,604,253. Filed July 11, 1949. Issued July 22, 1952. 4 claims. [Cl. 229-7]

A dispensing carton for disposable paper bibs is constructed in such a manner that the edges of the bibs are maintained in a feathered or slightly offset position with relation to each other, and the removal of the sheets from the box is thereby facilitated. 5 figures. E.G.S.

FOLDING BOXES

SAMSING, ROLF A. Box blank and box. Canadian patent 484,271. Filed Dec. 2, 1950. Issued June 24, 1952. 3 claims. Assigned to Associated Folding Box Co.

A one-piece box includes end-wall panels at each end of the bottom wall which are slotted to receive co-operating side-wall flaps. This is the same as U. S. patent 2,553,870; *cf.* B.I.P.C. 21: 817. 4 figures. E.G.S.

GASTIGHT PACKAGING

BERGSTEIN, FRANK D. Tight carton. U. S. patent 2,604,252. Filed April 9, 1947. Issued July 22, 1952. 7 claims. [Cl. 229-5.5]

A paperboard carton is sealed against penetration by liquid or gas by the spraying of a thermoplastic composition onto the inner surface of the end closure. 14 figures. E.G.S.

INTERIOR PACKING

LADNER, OSCAR L. Paddings for packings and a method of manufacturing the same. Canadian patent 484,424. Filed May 23, 1949. Issued July 1, 1952. 3 claims.

A resilient padding or shock-absorbing cushion for packing purposes is formed by coating corrugated board with an adhesive, immediately rolling the material into a body or loose roll of circular or elliptical cross section and, while the adhesive layer is still tacky, subjecting the roll to heat and pressure until the padding assumes the desired shape and the adhesive dries. 6 figures. E.G.S.

VAN ANTWERPEN, MARTIN. Packaging strip. U. S. patent 2,603,349. Filed June 17, 1949. Issued July 15, 1952. 2 claims. [Cl. 206-62]

A composite fiberboard-corrugated board cushioning and shock-absorbing packaging strip is designed to engage and support a number of sheets of automobile window glass in a shipping carton and to protect the glass against breakage. 5 figures. E.G.S.

WHITEHEAD, EARL B. Protective device. U. S. patent 2,604,256. Filed Sept. 13, 1950. Issued July 22, 1952. 2 claims. Assigned to Atlantic Carton Corporation. [Cl. 229-89]

A cardboard packaging device which is designed to act as a shock absorber or cushion for an individual fragile article (e.g., a bottle, jar, or the like) within a carton embodies V-shaped tabs which engage the inner walls of the carton and hold the article away from the walls. 4 figures. E.G.S.

LUBRICATION AND LUBRICANTS

SPROULE, LORNE W., and KING, LAURENCE F. Brick grease composition. U. S. patent 2,591,630. Filed Nov. 28, 1950. Issued April 1, 1952. 6 claims. Assigned to Standard Oil Development Company. [Cl. 252-41]

A block or brick lubricating composition which is adapted for high-temperature service on paper drier journals consists essentially of 3-6 parts of mineral oil with a Saybolt viscosity of 80-125 seconds at 100°F. and 1-6 parts of a viscous mineral oil with a Saybolt viscosity of 2000-5000 seconds at 100°F. The oil mixture is thickened to a stiff grease consistency by the addition of a soda-base soap. E.G.S.

WADDEY, WALTER E., and CYPHERS, ELMER B. Extreme pressure lubricant. U. S. patent 2,592,497. Filed Oct. 29, 1949. Issued April 8, 1952. 4 claims. Assigned to Standard Oil Development Company. [Cl. 252-46.7]

An extreme-pressure lubricant (e.g., for use with hypoid gears) comprises 90% of a lubricating oil base stock, 2.5% of a 50% oil concentrate of a phosphorus pentasulfide-treated degras (wool oil extract), and 7.5% of a chlorinated wax or other halogenated nonvolatile organic compound (e.g., chlorinated kerosene, chlorinated naphtha, or a chlorinated methyl ester of tall oil). E.G.S.

MACHINERY—BEATERS

DODGE, GEORGE W. Beater. U. S. patent 2,602,379. Filed Oct. 9, 1945. Issued July 8, 1952. 1 claim. Assigned to the Noble & Wood Machine Company. [Cl. 92-22]

A commercial-size beater includes means for carrying out the operations of beating, mixing, breaking, screening, circulating, washing, and dewatering, individually or in various combinations; runs can be made under controlled conditions of temperature, hydraulic shear, consistency, and pressure. A beater roll and bedplate, a breaking and mixing unit, a stock chest, a variable stock thickener, a washer and dewaterer, and a heat exchanger are combined and interconnected in a single machine; the units are provided with suitable cross connections, valves, pumps, stock gates, deflectors, and screens. 15 figures. E.G.S.

MACHINERY—CARTON-FEEDING MECHANISM

WILLIAMS, VICTOR G. Means for opening and loading carton blanks on the conveyer of a packaging machine. U. S. patent 2,601,481. Filed Feb. 28, 1949. Issued June 24, 1952. 6 claims. Assigned to Delamere & Williams Company Limited. [Cl. 93-53]

A carton-feeding mechanism for high-speed automatic packaging machines includes means for transferring cartons from an adjacent magazine to a conveyor and opening them for filling. 16 figures. E.G.S.

MACHINERY—CHIPPERS

JOHNSON, CHARLES A. Wood chipper. Canadian patent 484,613. Filed June 21, 1948. Issued July 8, 1952. 7 claims.

This corresponds to U. S. patent 2,566,938; *cf.* B.I.P.C. 22: 149-50. E.G.S.

MACHINERY—CONVERTING MACHINERY

ARNESON, LAWRENCE E. Machine for inserting handles in cartons. U. S. patent 2,601,816. Filed June 2, 1947. Issued July 1, 1952. 12 claims. Assigned to Morris Paper Mills. [Cl. 93-36; changed to 93-36.7]

A machine is provided for the insertion of U- or C-shaped metal carrying handles into cardboard bottle carriers. 8 figures. E.G.S.

BELLATO, FRANK A. Paper box folding and corner locking machine. U. S. patent 2,604,022. Filed Feb. 23, 1951. Issued July 22, 1952. 6 claims. Assigned to Carando Machine Works. [Cl. 93-51]

A box-folding machine incorporates spring-loaded, cam-actuated fingers as part of a plunger and die assembly for engaging hook-and-eye connections between infolded tabs on the ends of a box. 6 figures. E.G.S.

CLAFF, CHESTER E., and MOELLER, CARL A. Manufacture of boxes and box blanks. Canadian patent 483,953. Filed March 12, 1949. Issued June 10, 1952. 24 claims. Assigned to Norfolk Paper Company, Inc.

A cardboard shoebox incorporates a reinforcing thread or cord which is secured to the free edges of the sides and ends of the box or cover adjacent to the corners. The machinery for producing the reinforced blanks is described. 11 figures. E.G.S.

CLAFF, CLARENCE L., CLAFF, CHESTER E., and MOELLER, CARL A. Method and machine for making box blanks. Canadian patent 483,949. Filed Feb. 25, 1949. Issued June 10, 1952. 6 claims. Assigned to Norfolk Paper Company, Inc.

A high-speed box-blank machine incorporates a die roll with interchangeable elements to provide for varying sizes and proportions of blanks. 23 figures. E.G.S.

CLAFF, CLARENCE L., CLAFF, CHESTER E., and MOELLER, CARL A. Method and machine for making box blanks. Canadian patent 483,950. Filed Feb. 25, 1949. Issued June 10, 1952. 8 claims. Assigned to Norfolk Paper Company, Inc.

Blanks for shoeboxes are produced by adhesively securing a preprinted web of cover paper to a cardboard web; creasing, slitting, and severing the resultant composite web while it is moving at high speed to form individual blanks; and regulating the length of the blank to maintain the printing in proper position on the blank and on the setup box. 14 figures. E.G.S.

CLAFF, CLARENCE L., and MOELLER, CARL A. Setting-up machines. Canadian patent 483,951. Filed Feb. 25, 1949. Issued June 10, 1952. 10 claims. Assigned to Norfolk Paper Company, Inc.

A semiautomatic machine for setting up boxes embodies pressing members which are actuated by a one-revolution clutch through a manually operated control mechanism. 11 figures. E.G.S.

CLAFF, CLARENCE L., and MOELLER, CARL A. Setting-up machines. Canadian patent 483,952. Filed Feb. 25, 1949. Issued June 10, 1952. 6 claims. Assigned to Norfolk Paper Company, Inc.

A machine for setting up cardboard boxes comprises a photoelectric cell and a source of light positioned on opposite sides of the path of travel of the boxes, together with suitable electrical connections for rendering pressure members operative when an advancing box intercepts the beam of light from the light source to the cell. 4 figures. E.G.S.

COLLINS, HOWARD A., and RUTH, HOWARD M. Tampon applicator grip forming apparatus. Canadian patent 484,336. Filed Dec. 16, 1948. Issued June 24, 1952. 5 claims. Assigned to International Cellucotton Products Company.

This is the same as U. S. patent 2,600,971; *cf* B.I.P.C. 22: 873. E.G.S.

PERILLI, LOUIS. Apparatus for treating box blanks. U. S. patent 2,602,416. Filed Dec. 11, 1950. Issued July 8, 1952. 16 claims. [Cl. 118-101]

An apparatus is provided for the removal of wax coatings from certain areas of precoated paper box blanks by the application of heat to those areas. A suitable adhesive composition is subsequently applied to the dewaxed surfaces. 10 figures. E.G.S.

SILLARS, GEORGE S. Box-making machine. Canadian patent 484,501. Filed April 25, 1950. Issued July 1, 1952. 5 claims. Assigned to Hoague-Sprague Corporation.

This is the same as U. S. patent 2,561,485; *cf.* B.I.P.C. 22: 71. E.G.S.

MACHINERY—CORRUGATING MACHINE

WIDMER, FRITZ, and ELMIGER, HERMANN. Apparatus for manufacturing corrugated inserts, adapted to be used in boxes. U. S. patent 2,604,421. Filed Feb. 28, 1950. Issued July 22, 1952. 7 claims. Assigned to Packmat A.G. [Cl. 154-30]

In a machine for the manufacture of corrugated inserts to be used in the packaging of ampoules, a flat strip of cardboard is placed over round, spaced, parallel rods and pressed between the rods by means of cam-actuated slidable plate. In this manner a corrugated strip is formed to which a facing sheet is adhesively attached. 7 figures. E.G.S.

MACHINERY—DRYERS

HORNBOSTEL, LLOYD. Head and shell joint for drier drums. U. S. patent 2,603,380. Filed March 2, 1946. Issued July 15, 1952. 6 claims. Assigned to Beloit Iron Works. [Cl. 220-55]

A bridging clamp arrangement is provided for locking the heads of a drier drum to the shell without perforating the latter. This corresponds to Canadian patent 474,369; *cf.* B.I.P.C. 21: 820. 4 figures. E.G.S.

MACHINERY—FOLDING MACHINE

SABEE, REINHARDT N. Tissue interfolding method and appara-

tus. Canadian patent 484,718. Filed June 21, 1947. Issued July 8, 1952. 11 claims. Assigned to International Cellucotton Products Company.

A high-speed rotary interfolding machine is adapted for the continuous Z-folding of lightweight facial tissue. 13 figures. E.G.S.

SCHICK, ANDRÉ. Supporting holder for container blanks. U. S. patent 2,604,021. Filed Aug. 2, 1950. Issued July 22, 1952. 6 claims. [Cl. 93-49]

A supporting holder is designed for use in the erection of cardboard bakery boxes from flat blanks. 13 figures. E.G.S.

MACHINERY—IMPREGNATING MACHINE

WYSS, OSWALD F., and PETER, HANS. Apparatus for impregnating pourable material such as chips, shavings, and fibrous material. U. S. patent 2,601,355. Filed Oct. 10, 1950. Issue June 24, 1952. 3 claims. Peter's interest assigned to Wyss. [Cl. 118-56]

An apparatus for the impregnation of chips, shavings, and fibers with sprayable material includes a horizontal drum for receiving the material to be impregnated. The drum has a rotating cylinder wall and normally stationary end walls. A rotating rake located within the drum revolves in a direction opposite to that of the cylinder wall, and its rotational speed is considerably greater than that of the wall. Nozzles whose spray cones cover the material thrown upward by the rake are also disposed within the drum. 5 figures. E.G.S.

MACHINERY—JORDANS

DRAPER, RALPH L. Jordan engine construction. U. S. patent 2,604,824. Filed May 5, 1947. Issued July 29, 1952. 4 claims. Assigned to John W. Bolton & Sons, Inc. [Cl. 92-27]

A jordan plug is provided with multiple-part, keystone-shaped separating members for insertion between the knives. This corresponds to Canadian patent 461,860; *cf.* B.I.P.C. 20: 368. 9 figures. E.G.S.

LARSON, OSCAR E. Jordan plug jacket. U. S. patent 2,601,814. Filed Jan. 23, 1946. Issued July 1, 1952. 11 claims. Assigned to John W. Bolton & Sons, Inc. [Cl. 92-27]

A jordan shell construction embodies a series of disks with cut-out portions which are adapted to receive the knives; the disks serve to strengthen the shell by resisting lateral shock and to prevent stretching of the banding wire. This corresponds to Canadian patent 453,981; *cf.* B.I.P.C. 19: 447. 15 figures. E.G.S.

MACHINERY—PACKAGING MACHINERY

CAMPBELL, SAMUEL J. Wrapping machine. U. S. patent 2,602,276. Filed Feb. 27, 1946. Issued July 8, 1952. 22 claims. [Cl. 53-88]

A machine is adapted for the packaging of individual candy bars in wrappers severed from webs of sheet material. 19 figures. E.G.S.

CLARK, PETER H. Packaging device. U. S. patent 2,603,928. Filed Dec. 17, 1949. Issued July 22, 1952. 6 claims. [Cl. 53-86]

Machinery is described for the packaging of tea in bags formed from two strips of heat-sealable film, laminated and/or coated paper, or foil. 6 figures. E.G.S.

CURRIE, GROVER C., DANS, BERNARD D., and ARNER, STERLING R. Means for placing bottles in open bottomed cartons. U. S. patent 2,603,924. Filed Nov. 28, 1947. Issued July 22, 1952. 35 claims. Assigned to Dacam Corporation. [Cl. 53-22]

An apparatus is provided for receiving bottles from a bottling machine, placing the bottles in cartons, and delivering the filled cartons from the machine. 51 figures. E.G.S.

FAHEY, RICHARD J., and BURGER, MARTIN. Carton handling and loading apparatus. U. S. patent 2,601,750. Filed Nov. 23, 1946. Issued July 1, 1952. 20 claims. Assigned to Shellmar Products Corporation. [Cl. 53-16]

An apparatus is adapted for automatic positioning of egg cartons in side-by-side arrangement prior to filling, and for the retention of the covers in a vertically downfolded condition so as not to interfere with the filling operation. 9 figures. E.G.S.

GREY, GEORGE. Packaging apparatus. U. S. patent 2,603,927. Filed Jan. 13, 1947. Issued July 22, 1952. 5 claims. Assigned to Harry J. Kurrus. [Cl. 53-57]

Machinery is provided for the packaging of tea or coffee in bags formed from two layers of filter paper. 25 figures. E.G.S.

HOAG, RODERICK W. Method and machine for wrapping articles. Canadian patent 484,415. Filed Aug. 3, 1949. Issued July 1, 1952. 9 claims.

Machinery is provided for the manufacture of shaker dispenser packets for granular or powdered materials (e.g., salt) from two continuous paper webs. One of the webs is corrugated to form individual receptacles for the packaged commodity. 4 figures. E.G.S.

IRMSCHER, HANS O. Carton contents tamping and sealing apparatus. Canadian patent 484,360. Filed Feb. 20, 1950. Issued June 24, 1952. 15 claims. Assigned to National Tea Packing Company, Inc.

An apparatus is provided for tamping down the contents (e.g., tea balls) of a successive series of filled cartons, and for folding and sealing the filled boxes prior to shipment. 15 figures. E.G.S.

MALHIOT, CLARENCE J. Packaging machine. U. S. patent 2,603,047. Filed May 25, 1946. Issued July 15, 1952. 8 claims. Assigned to F. B. Redington Co. [Cl. 53-96]

A machine which is adapted for use in the packaging of foodstuffs (e.g., oleomargarine, butter, and the like) includes synchronized means for feeding

an article into the machine and packaging it in a moistureproof, airtight, laminated-paper wrapper. 20 figures. E.G.S.

SANDBERG, OSCAR. Package wrapping mechanism. U. S. patent 2,603,048. Filed Nov. 29, 1946. Issued July 15, 1952. 10 claims. Assigned to Lynch Corporation. [Cl. 53-135; changed to 53-126]

A cooky-packaging mechanism is equipped with a wrapper hold-down element and means for retaining the ends of a stack of cookies intact until they are enclosed in a wrapper held against the stack by the hold-down element. 11 figures. E.G.S.

MACHINERY—PAPER CARRIER

COLEMAN, THEODORE L. Carrier apparatus for paper driers. U. S. patent 2,601,502. Filed Feb. 4, 1950. Issued June 24, 1952. 5 claims. [Cl. 34-120]

A web carrier for a paper drier is constructed in such a manner that the number of sheaves formerly required is reduced, the need for angularly adjustable sheaves is eliminated, excessive wear to the ropes is diminished, and the spearing of the nosepiece of the paper web as it leaves the drier is facilitated. 2 figures. E.G.S.

MACHINERY—PAPER MACHINE—CYLINDER MOLD

GEARY, ESTEL B. Cylinder tissue paper machine. U. S. patent 2,602,380. Filed June 20, 1950. Issued July 8, 1952. 2 claims. [Cl. 92-43]

A cylinder machine designed for the production of tissue is constructed in such a manner that excessive pressure on the paper web is eliminated and no pressure on the drier felts is required. 1 figure. E.G.S.

MACHINERY—PASTING MACHINE

VAN BUREN, JOHN. Machine for applying adhesive to carton flaps. U. S. patent 2,603,181. Filed Dec. 4, 1948. Issued July 15, 1952. 4 claims. Assigned to Chisholm-Ryder Company of Pennsylvania. [Cl. 118-253]

A carton-sealing machine is so constructed that measured amounts of glue are accurately applied to the parts of the carton to be sealed; the same parts are heated as the carton is fed through the machine, and thus the drying and setting of the adhesive is facilitated. 19 figures. E.G.S.

MACHINERY—PULP-INSULATING MACHINE

CAMILLI, GUGLIELMO, GRAY, WILLARD F. M., and MULLIGAN, LEO. Paper pulp coating of coils. U. S. patent 2,602,035. Filed Sept. 8, 1949. Issued July 1, 1952. 2 claims. Assigned to General Electric Company. [Cl. 154-80]

In a method for the hydraulic application of paper pulp insulation to electrical coils, provision is made for pressboard spacer members between the concentric turns of a disk coil, as well as between the individual layers of coil, in order to form ducts for the free flow of liquid after it has passed through a screening or permeable wrapping surrounding the coil. 5 figures. E.G.S.

EWALDSON, WALDEMAR C. Liquid removing pressure roller. U. S. patent 2,602,381. Filed April 16, 1947. Issued July 8, 1952. 3 claims. Assigned to Western Electric Company, Incorporated. [Cl. 92-49]

The pressure rollers of a pulp-insulating machine include a drive roller which rotates about a fixed axis and has annular grooves in its periphery adapted to receive ribbons of pulp surrounding electrical conductors. 5 figures. E.G.S.

MACHINERY—ROLL STANDS

ROSELIUS, LOUIS W. Mill roll stand. Canadian patent 484,371. Filed Aug. 26, 1947. Issued June 24, 1952. 2 claims. Assigned to S&S Corrugated Paper Machinery Co., Inc.

This is the same as U. S. patent 2,581,711; *cf.* B.I.P.C. 22:461-2. E.G.S.

MACHINERY—SHEET-FEEDING MECHANISM

HEINRICH, LUDWIG K. Magazine feed. U. S. patent 2,603,364. Filed Sept. 13, 1946. Issued July 15, 1952. 2 claims. Assigned to The Celotex Corporation. [Cl. 214-8.5]

A magazine-type sheet feeder is described in which the sheets being fed are prevented from rocking back and forth while in the magazine. 2 figures. E.G.S.

MACHINERY—TUBE MAKING MACHINE

VON LIEDTKE, RUDOLPH H. Machine for making laminated paper tubes. U. S. patent 2,602,382. Filed Sept. 4, 1945. Issued July 8, 1952. 1 claim. Assigned to McGraw Electric Company. [Cl. 92-66]

A machine is provided for the manufacture of laminated tubes from paper pulp as described in U. S. patent 2,599,878; *cf.* B.I.P.C. 22: 878-9. 13 figures. E.G.S.

MACHINERY—WEB-TENSION CONTROL

HALTER, ALLAN C. Control system for matching the speeds of mills and reels. U. S. patent 2,601,957. Filed Nov. 5, 1949. Issued July 1, 1952. 5 claims. Assigned to Allis-Chalmers Manufacturing Company. [Cl. 242-75]

A system is provided for controlling the speed of a reel during the threading of a strip in which variations in the tension setting of the strip during winding are ineffective to vary the speed of the reel during threading. 1 figure. E.G.S.

MACHINERY—WIRES

HOSE, ALFRED G., and DILLEY, DONALD C. Seam for woven wire fabric. Canadian patent 484,348. Filed Nov. 4, 1949. Issued June 24, 1952. 4 claims. Assigned to Lindsay Wire Weaving Company.

An eight-carat gold alloy solder is used to join the ends of a woven wire fabric to form a continuous Fourdrinier wire. This is the same as U. S. patent 2,496,052; *cf.* B.I.P.C. 20: 534. 4 figures. E.G.S.

MERCERIZATION PROCESS

JORIS, GASTON. Steeping press. U. S. patent 2,601,400. Filed Aug. 7, 1947. Issued June 24, 1952. 9 claims. Assigned to Textile and Chemical Research Company Limited. [Cl. 100-50]

A steeping press designed for use in the manufacture of viscose includes means for automatically discharging treated sheets from the press. 13 figures. E.G.S.

MOLDED PULP ARTICLES

DE REAMER, WILLIAM J. Die for molding pulp articles. U. S. patent 2,601,815. Filed Dec. 14, 1945. Issued July 1, 1952. 11 claims. Assigned to Mapes Consolidated Manufacturing Company. [Cl. 92-54]

A die for molding pulp articles (e.g., packages for choice fruits and vegetables) includes a sheetlike body with closely arranged, relatively deep depressions and high projections. The working face of the die is covered with fine-mesh brass or copper screen, and the appropriate parts of the screen are formed to fit the depressions or cavities in the die body. 10 figures. E.G.S.

PACKAGING

CHIDSEY, FRANCIS A., JR. Method of packaging articles in handled carriers. U. S. patent 2,603,923. Filed Sept. 29, 1950. Issued July 22, 1952. 1 claim. Assigned to Container Corporation of America. [Cl. 53-3]

A method of packaging canned goods in a paperboard carrier involves the placement of the cans on the central panel of a flat, cut, creased blank; the folding of the wall panels around the goods; and the gluing of the various panels in the erected condition. 4 figures. E.G.S.

ROCKEY, BENJAMIN W., and SALMON, EDWARD L. Package and supporting tag for fuse plugs. U. S. patent 2,604,204. Filed July 21, 1949. Issued July 22, 1952. 1 claim. [Cl. 206-45.19]

A combination package and supporting tag for screw-in type electric fuses constitutes an initially flat, foldable, polygonal cardboard panel which has a number of openings in one portion for frictionally receiving the fuses. 4 figures. E.G.S.

PAPER—COATED

RICHMOND, HOWARD B., and MORTENSEN, ROBERT W. Coating feed mechanism for gate rolls. U. S. patent 2,604,067. Filed Aug. 12, 1950. Issued July 22, 1952. 10 claims. Assigned to Consolidated Water Power & Paper Co. [Cl. 118-259; changed to 118-262]

A coating feed mechanism includes means for continuously carrying a coating material feed pipe forwardly and backwardly along the entire length of the nip of the gate rolls. 9 figures. E.G.S.

SZWARC, ALEXANDER. Water-vapor resistant coated paper. Canadian patent 482,312. Filed Oct. 19, 1946. Issued April 8, 1952. 2 claims. Assigned to Canada Paper Company.

A kraft paper which is waterproofed with a plasticized resin-asphalt wax composition exhibits good fungicidal properties and low water-vapor permeability. This is the same as U. S. patent 2,496,566; *cf.* B.I.P.C. 20: 535. E.G.S.

PAPER—COATED (HOT-MELT)

SCHRAMM, AUGUST F., JR. Method of making a stiffened permeable resin coated fibrous sheet. U. S. patent 2,603,575. Filed Nov. 17, 1949. Issued July 15, 1952. 3 claims. [Cl. 117-60; changed to 117-16]

A fibrous sheet material (e.g., cotton fabric, sulfite paper, or thin felt) is rendered waterproof by the application of a solid, granular resinous substance (e.g., a vinyl chloride-vinyl acetate copolymer) to a moistened sheet in the presence of a phosphate plasticizer (e.g., tributoxyethyl phosphate) and the subsequent heating of the treated sheet to effect drying and the softening and adherence of the resinous material. 6 figures. E.G.S.

PAPER SIZING

TADEMA, HARCO J. Sizing compositions and their preparation and use in paper. U. S. patent 2,602,739. Filed July 28, 1947. Issued July 8, 1952. 9 claims. Assigned to Shell Development Company. [Cl. 92-21]

A paper sizing composition comprises an aqueous emulsion of colophony and an Edeleanu extract of lubricating oil. This is the same as Canadian patent 467,924; *cf.* B.I.P.C. 21: 140. E.G.S.

PAPER SPECIALTIES

BARBIERI, CESARE. Lids for paper containers. Canadian patent 482,324. Filed Oct. 8, 1949. Issued April 8, 1952. 4 claims. Assigned to Dixie Cup Company.

A lid for a paper food container is so constructed that it can be adjusted to fit receptacles of various sizes and shapes. This is the same as U. S. patent 2,505,748; *cf.* B.I.P.C. 20: 763. 8 figures. E.G.S.

BARBIERI, CESARE. Method of making paper containers. U. S. patent 2,602,383. Filed Jan. 10, 1948. Issued July 8, 1952. 2 claims. Assigned to Dixie Cup Company. [Cl. 93-39.1]

A paper cup for hot liquids is constructed in such a manner that the overlapping ends of the cup blank are securely sealed and locked against separation from each other. As a result, uncurling of the container wall and consequent leakage are eliminated. 16 figures. E.G.S.

BRADY, CHARLES V., and OTTINGER, AUGUST F. Valved bags and their manufacture. Canadian patent 484,462. Filed Oct. 6, 1949. Issued July 1, 1952. 5 claims. Assigned to Bemis Bro. Bag Company.

This is the same as U. S. patent 2,564,462; *cf.* B.I.P.C. 22: 79. E.G.S.

CATLIN, JOHN B., and WOLLWAGE, JOHN C. Filter materials and process for making such materials. Canadian patent 484,526.

Filed Aug. 27, 1945. Issued July 1, 1952. 9 claims. Assigned to Paper Patents Company.

A filter element for a lubricating oil filter or the like is formed of several plies of thin creped tissue impregnated with a water-soluble urea- or phenol-formaldehyde resin. This is the same as U. S. patent 2,554,814; *cf.* B.I.P.C. 21: 898-9. E.G.S.

CRARY, JAY D. Handled container. U. S. patent 2,603,409. Filed June 30, 1950. Issued July 15, 1952. 6 claims. Assigned to Paper Strap Inc. [Cl. 229-54]

A paper shopping bag is provided with a multi-ply paper-strap carrying handle. 18 figures. E.G.S.

CRARY, JAY D. Handled container and method of manufacture. U. S. patent 2,603,407. Filed June 2, 1948. Issued July 15, 1952. 15 claims. Assigned to Paper Strap Incorporated. [Cl. 229-54]

A paper bag or container is provided with a multi-ply paper carrying strap which can be folded snugly against the wall of the container when not in use. 13 figures. E.G.S.

CRARY, JAY D. Shopping bag. U. S. patent 2,603,408. Filed June 13, 1949. Issued July 15, 1952. 3 claims. Assigned to Paper Strap Inc. [Cl. 229-54]

A paper shopping bag is equipped with a multi-ply paper carrying strap which has a relatively flat gripping surface. 6 figures. E.G.S.

HEYWOOD, VINCENT E. Dry or pressure-sealing envelope. U. S. patent 2,601,946. Filed Nov. 24, 1948. Issued July 1, 1952. 17 claims. Assigned to United States Envelope Company. [Cl. 229-80]

A dry or pressure-sealing envelope is provided with a pull tab for opening its sealed closure flap, which is coated with a layer of tacky rubber latex. 12 figures. E.G.S.

KEGAN, ALBERT I., and NEELY, WAYNE A. Envelope. U. S. patent 2,601,530. Filed Oct. 23, 1947. Issued June 24, 1952. 9 claims. Assigned to Samuel W. Kipnis. [Cl. 229-72]

A paper envelope for the shipment of coins, keys, or similar objects is constructed in such a manner that neither the envelope nor the enclosed article is damaged when the envelope is passed through a stamp-canceling machine. The inner faces of the envelope are coated with a dry cohesive composition. 26 figures. E.G.S.

NIELSEN, MORRIS L., and NASON, HOWARD K. Flameproofing. U. S. patent 2,603,614. Filed Dec. 30, 1949. Issued July 15, 1952. 7 claims. Assigned to Monsanto Chemical Company. [Cl. 260-30.6; changed to 260-30.2]

A glowproofing composition which is applicable to cotton fabric, loose cotton fibers (e.g., batting), wood, and paper comprises the combination of a resorcinol- or phenol-formaldehyde resin and 3-90% of the reaction product of 2-4 moles of melamine and one mole of phosphorus pentoxide heated to about 400°C. E.G.S.

THILÉN, LEIF G. L. Paper parachute. U. S. patent 2,601,343. Filed Jan. 11, 1949. Issued June 24, 1952. 3 claims. [Cl. 244-145]

A paper parachute is intended for use in the dropping of supplies from aircraft. 6 figures. E.G.S.

TRUE, JAMES E., and RUFFALO, JOHN B. Mailing piece. U. S. patent 2,603,410. Filed June 29, 1949. Issued July 15, 1952. 1 claim. Assigned to True Associates John Service Corporation. [Cl. 229-92.1]

A mailing piece, preferably a letter, which can be used with or without an envelope, is provided with one or more pockets for receiving enclosures, such as a business reply card or envelope, an order form, a check, or other material. 12 figures. E.G.S.

PHYSICAL TESTING—PAPER—ABSORPTION

SOBOTA, JOHN T. Art of evaluating sanitary paper products. U. S. patent 2,603,969. Filed Oct. 5, 1949. Issued July 22, 1952. 2 claims. Assigned to Fort Howard Paper Company. [Cl. 73-159]

A portable apparatus for demonstrating the absorbency of toilet tissue includes a motor-driven shaker, an invertible, vented shaking bottle, and a simulated sanitary trap. 3 figures. E.G.S.

PHYSICAL TESTING—PULP—FREENESS

CAMPBELL, JOHN F., and SHIRLEY, THEODORE M. Pulp testing device. U. S. patent 2,602,325. Filed Dec. 31, 1947. Issued July 8, 1952. 2 claims. Assigned to The Patent and Licensing Corporation. [Cl. 73-63]

A freeness tester is designed for the measurement of the drainage characteristics of wood-fiber insulating-board pulps. The device is adapted for the use of a test specimen sufficiently large to be representative of the batch of pulp being tested. The tester comprises an upper chamber having an upper cylindrical section with a flanged lower edge and a lower frustoconical section with a flanged upper edge secured to the lower edge; a screen extending horizontally across the upper chamber and removably secured between the above flanged members; a closed lower chamber; a conduit connecting the apex of the frustoconical section with the top of the lower chamber; an orifice plate having an opening of predetermined size situated at the juncture of the lower frustoconical section and the conduit; and a quick-opening valve in the conduit for admitting a pulp suspension from the upper to the lower chamber instanteously. 3 figures. E.G.S.

PLASTICS

CAUGHEY, ROBERT A. Cellulosic composition and process of making same. Canadian patent 484,934. Filed April 13, 1946. Issued July 15, 1952. 2 claims. Assigned to Plaswood Corporation of Canada Limited.

A process for the manufacture of a synthetic wood material comprises adding a sulfuric acid catalyst to a urea-formaldehyde condensation product, admixing 50-85% of dried wood waste, and molding the resultant mass under heat and pressure to form a rigid product. E.G.S.

MCELHINNEY, THOMAS R., and WOODRUFF, THOMAS D. Composition of matter for making molded phonograph records. U. S. patent 2,592,051. Filed Oct. 11, 1949. Issued April 8, 1952. 8 claims. Assigned to Valite Corporation. [Cl. 106-37]

A resinous composition which is suitable for use in the molding of phonograph records is prepared by intimately mixing and compounding at an elevated temperature ethylcellulose with a permanently thermoplastic modification product formed by the reaction of a pinewood pitch with furfural, a drying oil (e.g., linseed oil, tall oil, tung oil, poppy-seed oil, sunflower oil, or perilla oil), and a softening agent (e.g., microcrystalline wax). E.G.S.

PLASTICS—PAPER-BASE

WACHTER, JOSEPH J., and STRAKA, CYRIL J. Process for producing phenolic laminates. Canadian patent 484,964. Filed Oct. 29, 1947. Issued July 15, 1952. 5 claims. Assigned to Westinghouse Electric Corporation.

This is the same as U. S. patent 2,565,152; *cf.* B.I.P.C. *22*: 85. E.G.S.

ROSIN

ST. CLAIR, WILLIAM E., and LAWRENCE, RAY V. Aluminum resinates and method of preparation. U. S. patent 2,567,250. Filed July 25, 1950. Issued Sept. 11, 1951. 7 claims. Assigned to the United States of America as represented by the Secretary of Agriculture. [Cl. 260-97.5; changed to 260-105]

A process of preparing an aluminum resinate comprises the heating of basic aluminum acetate with a rosin material (e.g., gum rosin, tall oil, or the like) and an aldehyde-yielding material (e.g., paraformaldehyde) at about 250°C. The product is characterized by increased metal content, conchoidal fracture, solubility in low-solvency hydrocarbons, and stability to heat and air. E.G.S.

SETUP BOXES

ROSENFIELD, LOUIS. Box or carton. U. S. patent 2,604,254. Filed May 8, 1950. Issued July 22, 1952. 1 claim. Assigned to Miro Container Company. [Cl. 229-8]

A flat, heart-shaped cardboard box is provided with stiff paper rims which are adhesively attached to the cover and base of the box. 7 figures. E.G.S.

SHIPPING CONTAINERS

BEEKMAN, EMILE MCK. Method of fabricating a double-wall container. U. S. patent 2,604,426. Filed Sept. 1, 1950. Issued July 22, 1952. 4 claims. Assigned to the United States of America as represented by the Secretary of the Army. [Cl. 154-83]

A double-walled, molded, resin-impregnated paper container is adapted for the shipment of storage batteries. 10 figures. E.G.S.

ELDREDGE, ELMER E. Carton. U. S. patent 2,603,404. Filed Sept. 20, 1949. Issued July 15, 1952. 1 claim. Assigned to Robert L. Eldredge. [Cl. 229-16]

A double-wall corrugated carton which is designed for the storage and shipment of cheese in rectangular block form is reinforced at each of its four vertical edges. 9 figures. E.G.S.

FRANKENSTEIN, WILLIAM P. Book style carton with infolded sides. U. S. patent 2,603,405. Filed Feb. 14, 1945. Issued July 15, 1952. 10 claims. [Cl. 229-31]

A cardboard or paperboard book-style carton is described in which the halves of the box are provided with hollow, spaced walls. 31 figures. E.G.S.

LEHMAN, CARL S. Carton for handled tools. U. S. patent 2,603,350. Filed May 29, 1951. Issued July 15, 1952. 5 claims. Assigned to The Fairfield Paper and Container Company. [Cl. 206-65]

A corrugated or paperboard carton is designed for the packaging of several long-handled tools (e.g., axes). The carton is so constructed that the tool heads cannot break or cut the portions of the carton which enclose them. 16 figures. E.G.S.

LOWE, FRED S. Box for vegetable products and the like. Canadian patent 483,866. Filed May 8, 1950. Issued June 10, 1952. 10 claims.

A corrugated box for vegetable products is constructed in such a manner that air is permitted to circulate through the contents of the box even if it is covered or stacked in a pile. 7 figures. E.G.S.

STEARN, WILLIAM T. Carton. U. S. patent 2,602,581. Filed Oct. 21, 1948. Issued July 8, 1952. 2 claims. Assigned to Celanese Corporation of America. [Cl. 229-45]

A corrugated board shipping carton is adapted for the packaging of cones or cheeses of yarn. 4 figures. E.G.S.

STRAUSS, HERMAN H. Shipping container. U. S. patent 2,603,401. Filed April 1, 1949. Issued July 15, 1952. 2 claims. Assigned to Gaylord Container Corporation. [Cl. 229-5.5]

A heavy-duty shipping container which has a triangular, square, or polygonal cross section is provided with side wall panel flaps which are designed to form hollow, right-angled, triangular ledge sections; the sections are automatically and irreversibly interlocked with one another at their adjacent ends to present a rigid, continuous, inner peripheral ledge for stiffening and strengthening the carton and for supporting and/or retaining an end closure. 16 figures. E.G.S.

STRAUSS, HERMAN H. Shipping container. U. S. patent 2,603,402. Filed March 5, 1951. Issued July 15, 1952. 1 claim. Assigned to Gaylord Container Corporation. [Cl. 229-5.5]

A heavy-duty shipping container with a square, rectangular, or polygonal cross section is provided with separate end closure disks which are retained by interal hollow ledge sections formed by inwardly folded marginal flaps of the side wall panels. 12 figures. E.G.S.

TYRSECK, WALTER J. Display containers. Canadian patent

483,969. Filed Dec. 28, 1948. Issued June 10, 1952. 6 claims. Assigned to Robertson Paper Box Co., Inc.

This is the same as U. S. patent 2,586,886; *cf.* B.I.P.C. 22: 642. E.G.S.

WELSHENBACH, CHARLES D. Golf club box. U. S. patent 2,604,255. Filed Feb. 12, 1949. Issued July 22, 1952. 3 claims. Assigned to The Hinde & Dauch Paper Company. [Cl. 229-27]

A paper-covered knockdown shipping and display container for golf clubs embodies separating partitions at its opposite ends for spacing the ends of the clubs. 6 figures. E.G.S.

SHIPPING CONTAINERS—FIBER DRUMS

STUART, KIMBERLY. Vertical axis beading. Canadian patent 483,997. Filed Aug. 28, 1950. Issued June 10, 1952. 16 claims. Assigned one half to Elizabeth R. B. Stuart.

A method for fastening a metal rim strip to the upper edge of a fiber drum includes the transverse curvature of the strip to provide a C-shaped rim clenched about and along the edge of the drum. 11 figures. E.G.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

BRADY, CHARLES V., and OTTINGER, AUGUST F. Valved bag. Canadian patent 484,658. Filed July 8, 1949. Issued July 8, 1952. 9 claims. Assigned to Bemis Bro. Bag Company.

A textile or paper-lined textile valve bag incorporates an insert-type valve sleeve. This is the same as U. S. patent 2,558,169; *cf.* B.I.P.C. 21: 902-3. 16 figures. E.G.S.

SULFITE WASTE LIQUOR

BIRD, PAUL G. Inhibition of scale formation in steam generation. Canadian patent 484,359. Filed Dec. 1, 1949. Issued June 24, 1952. 5 claims. Assigned to National Aluminate Corporation.

This is the same as U. S. patent 2,576,386; *cf.* B.I.P.C. 22: 383. E.G.S.

PEARL, IRWIN A. Process of preparing guaiacyl compounds from lignin. U. S. patent 2,602,089. Filed Nov. 12, 1949. Issued July 1, 1952. 6 claims. Assigned to Sulphite Products Corporation. [Cl. 260-521]

Guaiacyl compounds are prepared in high yield from a gymnosperm lignin (e.g., from sugar-free fermented spent sulfite liquor) by the digestion of the lignin substance in an aqueous mixture under pressure at 160-180°C. in the presence of cupric oxide and a excess of sodium hydroxide. The molecular-weight ratio of cupric oxide to lignin is about 13:1. E.G.S.

TALL OIL

CASTELLANO, WILLIAM. Mastic floor covering and a process of making it. U. S. patent 2,603,571. Filed Dec. 19, 1949. Issued July 15, 1952. 17 claims. Assigned to Union Oil Company of California. [Cl. 106-123]

A mastic-type floor covering is prepared from a mixed polyhydric alcohol ester of tall oil pitch and acids produced by the oxidation of paraffin wax. The mixed ester is hardened by the addition of ethylcellulose. E.G.S.

HAINES, EDWARD C. Copolymerization of vinyl monomers with fatty oils, fatty acids, resins and the like. U. S. patent 2,602,071. Filed March 23, 1949. Issued July 1, 1952. 7 claims. Assigned to George D. Wetherill Varnish Co., Inc. [Cl. 260-23]

Liquid compositions which are suitable for use in paints and varnishes are prepared by the copolymerization of styrene and a monomer selected from the group consisting of tung oil, oiticica oil, tall oil, and rosin. E.G.S.

MARLING, PAUL E. Styrenated oil-tall oil vinyl esters coating compositions. U. S. patent 2,603,611. Filed Oct. 25, 1948. Issued July 15, 1952. 10 claims. Assigned to Monsanto Chemical Company. [Cl. 260-23]

A transparent coating composition which is resistant to thermal softening and to the action of organic solvents, water, and alkali comprises (a) 25-90% of a copolymer of 40-60% of a fatty acid-containing natural drying oil (e.g., linseed oil, soybean oil, tung oil, or dehydrated caster oil) and 40-60% of α-methylstyrene and (b) 10-75% of a mixture of the vinyl esters of tall oil acids. E.G.S.

TEXTILE INDUSTRY AND FABRICS—FIREPROOFING

FORD, FLORENCE M., and HALL, WILLIAM P. Flameproofing of fibrous materials. Canadian patent 483,884. Filed Feb. 20, 1945. Issued June 10, 1952. 4 claims. Assigned to Joseph Bancroft & Sons Company.

A flameproofing composition for textiles is prepared by mixing suitable quantities of urea and orthophosphoric acid, heating rapidly to 375°F., cooling the resulting mixture, and adding water, ammonium hydroxide, and formaldehyde. This is the same as U. S. patent 2,482,756; *cf.* B.I.P.C. 20: 150. E.G.S.

TEXTILE INDUSTRY AND FABRICS—TESTING

SCHIEFER, HERBERT F. Apparatus for testing the resistance of materials to abrasion. U. S. patent 2,603,083. Filed Feb. 19, 1948. Issued July 15, 1952. 5 claims. Assigned to the United States of America as represented by the Secretary of Commerce. [Cl. 73-7]

An abrasion tester embodies a belt-driven abradant wheel and a sample-holding ring which are rotated in the same direction and with the same angular velocity, but about different axes. The wheel so engages the sample that the instantaneous relative velocity between the wheel and the sample is constant in magnitude and direction for every point of the sample. 8 figures. E.G.S.

TRANSPARENT CONTAINERS

OTTEN, ERIC. Display carton. U. S. patent 2,602,541. Filed Nov. 5, 1949. Issued July 8, 1952. 3 claims. [Cl. 206-44.11]

A display container for card-mounted merchandise (e.g., hairpins) comprises a transparent plastic (e.g., cellulose acetate, nitrate, or butyrate) vertical body and a stiff, flat pasteboard base. 5 figures. E.G.S.

WET STRENGTH

SAUNDERS, CHARLES. Bi-permeated method of gluing and waterproofing. Canadian patent 484,626. Filed Jan. 16, 1946. Issued July 8, 1952. 4 claims.

A process for the production of a high-wet strength paper comprises the steps of permeating the sheet with a strong aqueous solution of chrome alum or formaldehyde, further saturating the sheet with a weak aqueous solution of animal or fish glue or gelatin, and allowing the treated paper to dry comparatively slowly at room temperature. The method is also suitable for use in the formation of waterproofed glued joints between layers of paper, wood, cloth, and the like. E.G.S.

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